Cooperation Unlimited

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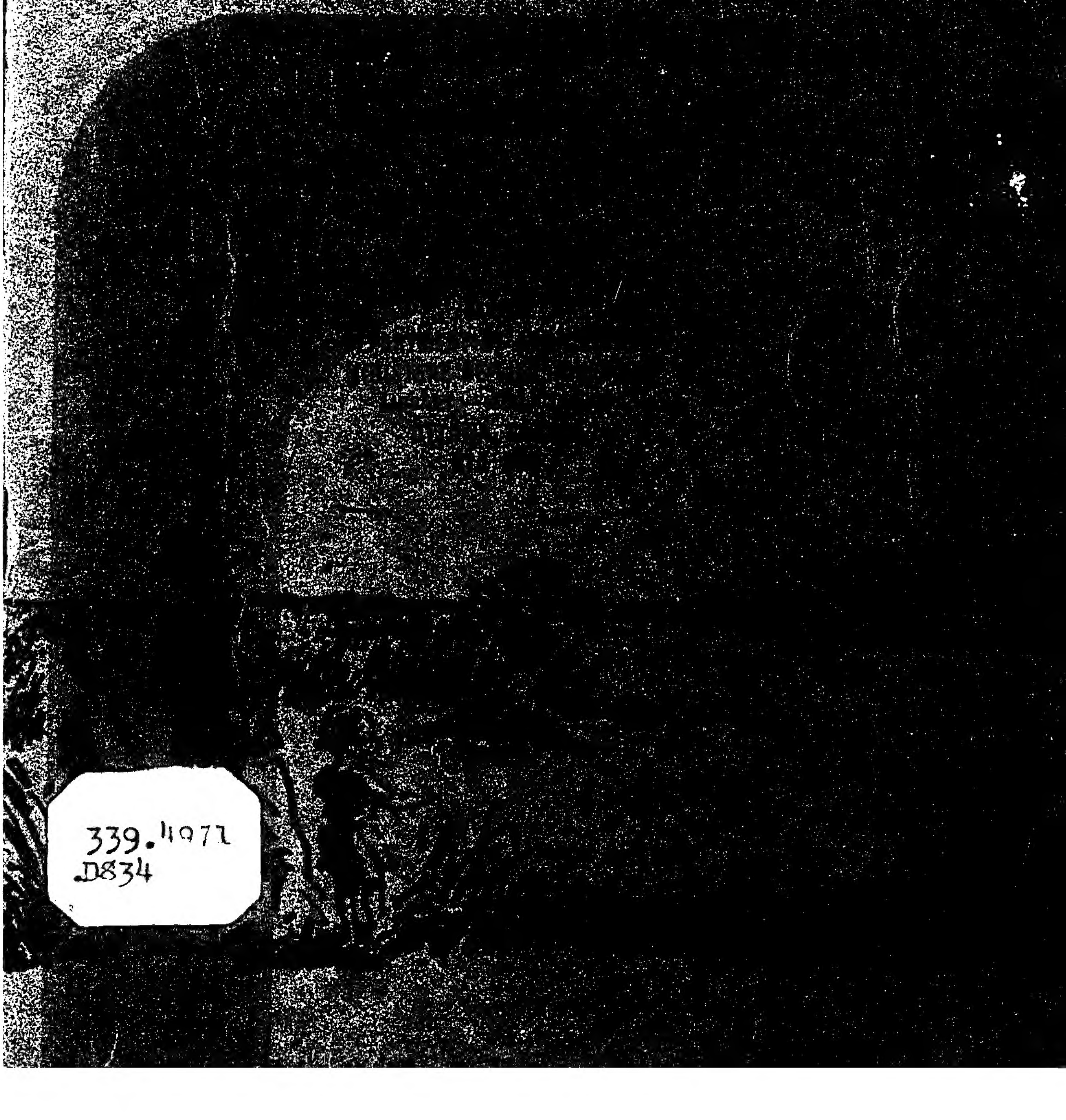

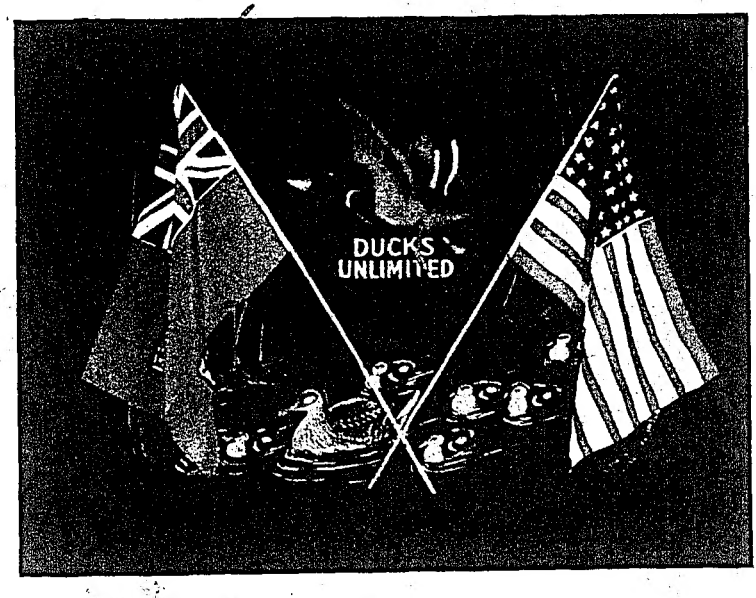

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Cooperation Unlimited . . .

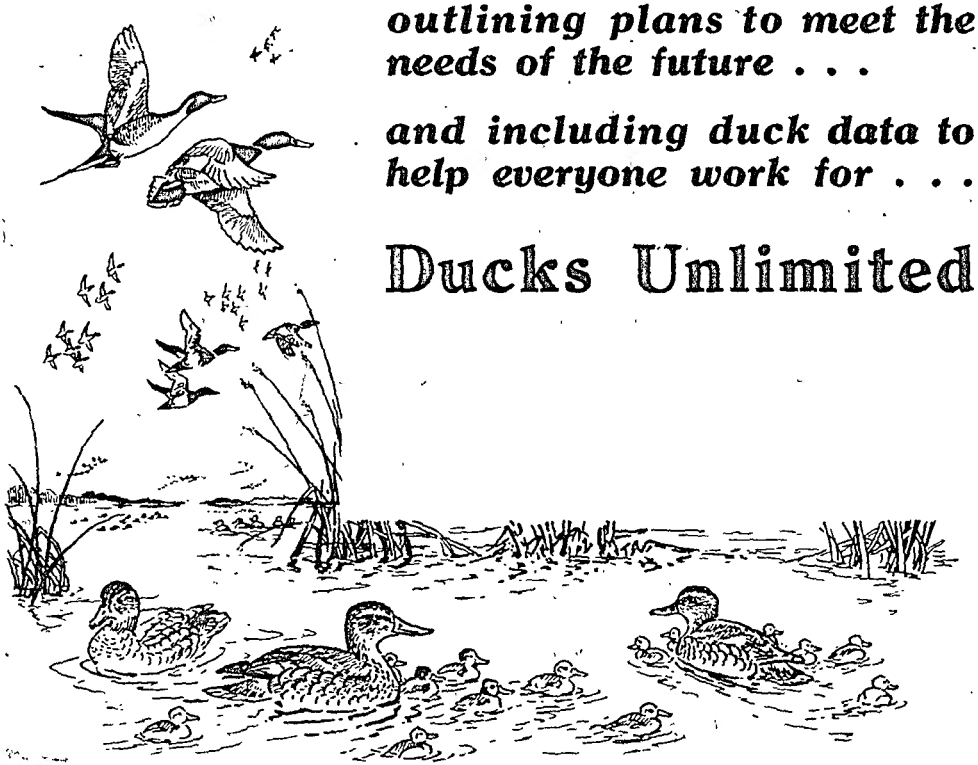
Progress report on restoration of North America's Big Duck Factory in the Canadian West

to all who are cooperating in this great work . . .

outlining plans to meet the needs of the future . . .

and including duck data to help everyone work for . . .

Ducks Unlimited



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Foreword . . .

Dear Kee-Man: This "Kee-Manual" is primarily for you—and all who cooperate for conservation.

The sportsmen and nature lovers of North America owe you a debt they can never repay! This is a token payment. A further (and worthier) token payment will be our book, "Ducks and Men"—to be published when time and personnel permit.

Sportsmen, particularly, tend to give too much credit to Ducks Unlimited for the miraculous work done under our name since we started operations in 1938. We (the Directors, Management and Personnel of DU) know how much credit is due to other individuals, organizations and agencies who have cooperated for conservation of North America's waterfowl..

Through DU, United States hunters and conservators have contributed approximately $1,500,000 for investment in restoring permanent waters in Canada. DU Trustees, Directors and staff contributed ideas and faithful work. Without the cooperation and encouragement of Canadian governments and people, however, this movement would have perished at an early age . . . (like a duckling stranded before it can fly!).

The Dominion Government rebated the cost of our Charter. Government officials have made available much useful information.

The Prairie Farm Rehabilitation Administration (P.F.R.A.) has created thousands of water areas throughout the duck-nesting territory. Many have improved waterfowl habitat. In addition, the P.F.R.A. has given us information and advice; loaned us engineering parties; supplied us with topographical plans; and encouraged their Community Pasture Managers to be our Kee-men in Pastures where we established Duck Factories.

The Alberta, Saskatchewan and Manitoba governments have given DU all rights needed for improving large tracts of land and water. On some projects they shared cost of construction. On many they assumed cost and responsibility of management. Personnel have been loaned to us without cost. Alberta and Saskatchewan governments supply us office space gratis. They also provide much cash to help control predators.

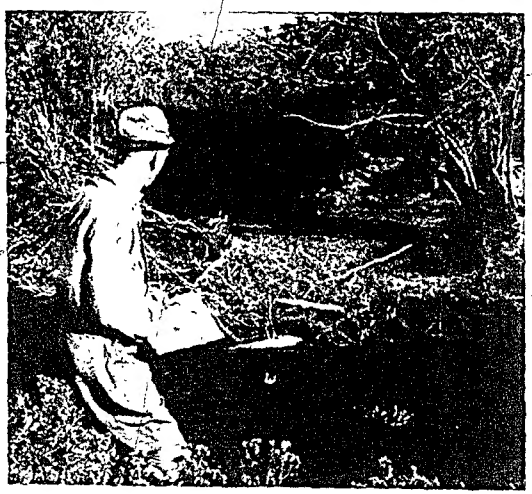
The Special Areas Board, in Alberta, have arranged land rights and flood easements where we have established Duck Factories on lands under their jurisdiction.

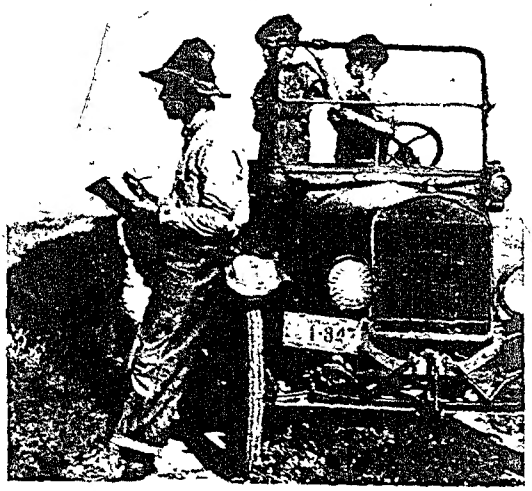
The Provincial Government and sportsmen of British Columbia have offered help when we have the personnel and resources to operate in their province.

Studies are now being made in eastern Canada where Government officials and sportsmen are giving material aid and advice.

Outstanding citizens contributed advice, cooperation and influence, without which DU might have been still-born.

The Fish and Game Leagues have cooperated in predator control. DU supplies a large share of the cash





needed; but much cash *and all the work* are invested by these sportsmen's groups.

The Wildlife Institute, under the Presidency of Senator Walcott, has done much useful research work. Their Delta Duck Station, under the able supervision of Mr. H. Albert Hochbaum, has provided many of the answers to our practical problems.

During our early years, when some professional wildlife experts looked on our program with some suspicion, Prof. Aldo Leopold, of Madison, Wisconsin, encouraged us; and gave useful advice. Profs. Dymond and Harkness, of Toronto University, and Snyder, of the Royal Ontario Museum of Zoology, not only gave us the benefit of their experience but also sent us several efficient aquatic biologists to assist in ecological studies.

We have always had the benefit of advice and guidance from Western Universities. Profs. Rowan, of Alberta, Rawson, of Saskatchewan, and Wardle, of Manitoba, have been most helpful whenever we needed guidance—which was often.

An arrangement has now been concluded whereby the University of Manitoba, Department of Zoology, will provide laboratory space and equipment, in which selected DU personnel can work in winter on "biological factors affecting duck abundance." Prof. R. A. Wardle will supervise the work which will be directed by DU.

Eastern Irrigation District personnel have helped us with land, water, ad-

Top: Kee-man Tom Hargrave.

Centre: Kee-man Harry Felt.

Bottom: Kee-man and young helpers.

vice and encouragement—to create some of North America's most remarkable "Duck Factories."

The Western Irrigation District is now cooperating with us, to do similar work. United Irrigation officials have offered their assistance.

We have many times gone to Hudson's Bay Company officials for advice and help. Their post managers in the duck nesting territory are numbered among our Kee-men. "The Great Company" has generously made land available at nominal cost.

The Canadian Broadcasting Corporation and radio stations CKRC, Winnipeg; CJGX, Yorkton; CJOC, Lethbridge; CFGP, Grande Prairie; CJRM, Regina; CFAC, Calgary; CJCA, Edmonton—have contributed time on the air, gratis, to advance this cause of conservation.

Daily and weekly papers and sporting magazines have been generous with publicity.

Municipal Councils have furnished land, at nominal cost, for our projects. Sometimes, they have supplied labor, teams and trucks to help build structures designed by our engineers and for which we supplied material.

Cities and towns (like Yorkton and Portage la Prairie) have arranged for necessary rights on lands we have flooded—and, also, taken over management of the projects established.

The Canadian National Railways have loaned their Engineer of Water Service as General Manager; and have been very helpful where projects encroached on their land holdings.

The Canadian Pacific Railway have donated several parcels of land for our use; and a C.P.R. Director, the late James R. Richardson, was our first Director for Manitoba.

The National Film Board has cooperated closely—particularly in production of a motion picture supplied by Ducks Unlimited. This film is titled "Life on Western Marshes." The Board is circulating this movie to hundreds of thousands of Canadians; and also, to audiences in United States, Europe and South America.

Farmers and ranchers over Alberta, Saskatchewan and Manitoba are taking an interest in wildlife conservation that is producing remarkable results. Through conservation measures on their own lands, these men are producing more ducks (and other wildlife) than all our 168 DU projects!

Our faithful Kee-Men (ranchers, miners, farmers, trappers, Northland pilots, merchants, hunters, professional men and women) have done the greatest work of all! They are a power for wildlife conservation throughout this country! Without their studies and reports, we were helpless.

Canadians have played a proud part in this great work. For every dollar in cash sent to Canada by United States hunters, Canadian governments and people have invested $10 in land, services and cooperation.

On behalf of those United States conservators who have contributed the cash—and our Trustees, Directors and staff, sincere thanks are tendered to the army of people in Canada who have helped build Ducks Unlimited . . . the conservation miracle of the age!

Yours for conservation,

T. C. MAIN, M.E.I.C.,

General Manager, Ducks Unlimited (Canada)

Blueprint of Ducks Unlimited

In the late 1920's and early '30's, North America's waterfowl population took a terrific nose-dive. Back in 1875 there were, possibly, 400 million ducks on the continent. By 1900 their population had dwindled to less than half that number. By 1934 a scant 27 million remained.

That is, in 60 years 93% disappeared . . . only 7% remained!

No wonder the sportsmen and nature lovers of the continent were worried. The duck decline was the subject of addresses in Parliament and Congress; and was discussed by editorials in our leading papers. One of the first definite actions we know of was taken by a small group of men in New York City, who, in 1930, financed More Game Birds in America Foundation.

The Foundation studied duck problems for several years. Their most notable contribution was a duck census taken in 1935, which showed conclusively that the great majority of our continental migratory waterfowl nest north of the Canadian boundary —and the bulk of these in the three Prairie Provinces and the North West Territories of Canada. They also had fairly good evidence that, here, losses were heavy.

From these studies it was evident that if anything could be done to save migratory waterfowl it must be done chiefly on the nesting grounds in Canada.

At that time, it was illegal to spend American tax money in a foreign country on such work. On the other hand, it was hardly fair to ask the Canadian government to spend their taxpayers' money in rehabilitating duck nesting territory. American sportsmen bag the majority of ducks killed each hunting season. Any Canadian government proposing to spend large sums of money on duck production in Canada might be criticized on the grounds that they were merely raising more ducks for U.S. hunters.

So the problem was right in the lap of the continental sportsmen — and particularly those of the United States. Recognizing this fact, the Foundation formed two companies: Ducks Unlimited, Inc., an American organization, whose only job is to collect money contributed by interested sportsmen; and Ducks Unlimited (Canada), whose only job is to invest that money wisely in duck production. Both are non-profit corporations.

Head office of the American Company is in New York. Regional offices are located in Chicago and San Francisco. A small paid staff keep the books and co-ordinates a large volunteer organization.

Policies are made and the work directed by a President, several Vice-presidents and 50 Trustees representing the principal duck hunting States of the Union. State Chairmen are appointed; and they, in turn, organize their States by appointing local Chairmen and committees in cities, towns and duck hunting clubs.

Each member fixes the amount of his own contribution, based upon his means and his interest in DU conservation work. These funds are collected by the local committees, relayed to the State Committee, and thence to the Board of Trustees.

Through Ducks Unlimited, Inc., United States hunters have contributed approximately $1,500,000 for investment in restoration work on the Big Duck Factory. The number of active members is well over 40,000.

In Canada, Ducks Unlimited (Canada) was incorporated by Dominion Charter as a non-profit organization. The Board of Directors are one-half outstanding Canadians, the other half nominated by the Trustees of

Ducks Unlimited, Inc. Management and working personnel are Canadian. Head office is in Winnipeg; with provincial offices in Regina, Edmonton and Fredericton, N.B., and field offices at Brooks and Strathmore, in southern Alberta.

Our Directors supervise development of this conservation work, year by year, on a long-term program. Their services and experience are contributed gratis.

DU blueprint for the restoration of North America's waterfowl resources enlists the wholehearted cooperation of all who are interested in that great cause.

Governments (Dominion, provincial, municipal), as well as citizens across Canada, contribute "cooperation unlimited." Businessmen, officials, hunters, farmers, teachers and folks in all walks of life, work as DU Kee-men.

A Problem in Conservation

Just why had the duck population and other wildlife resources declined?

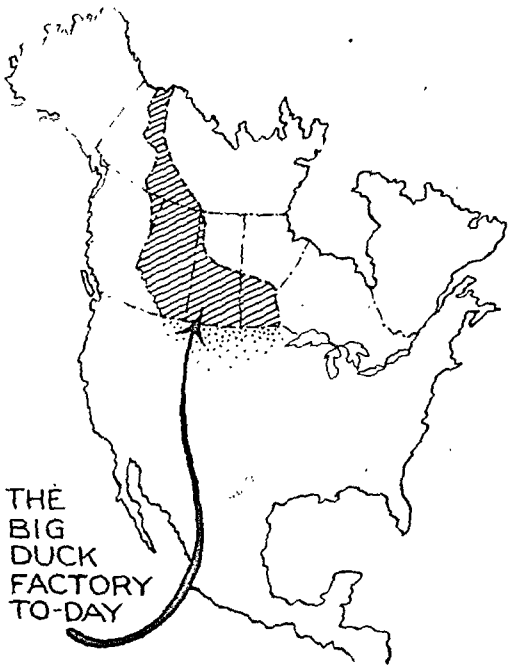
The waterfowl breeding range a century ago covered a far greater area than today. It included Michigan, Illinois, Minnesota, Iowa; westward across the great central plain through Kansas, Utah, Nebraska, the Dakotas and Montana; and northward through the Canadian prairies, parklands and northlands to the Arctic. In the area described above the great bulk of migratory waterfowl, including shorebirds, grebes, etc., as well as ducks, geese and swans, were raised. A smaller percentage, including most of the Black Ducks, nested in the northern Atlantic Coast States, the Maritimes, Quebec, Ontario, Labrador and Newfoundland.

Ducks alone, in those days, probably numbered around 400 million. They had reached their climax population. At that point their predators, and other natural factors, produced losses each year equivalent to the total crop—so the population was practically static. The destruction of ducks by Indians probably was a small part of the total annual losses—because of inadequate lethal weapons and sparse population.

At this point the white man invaded North America. Marshes were drained for agricultural purposes. Timber cover was destroyed by fire or otherwise. Millions of acres of good duck nesting territory were converted to the uses of Man. In addition, Man was equipped with efficient fowling pieces; and many individuals destroyed ducks wholesale for the market.

At their climax population, natural losses balanced annual increase. In other words, losses occurred every year equal to 100% of duck production. Man added to those losses by wholesale shooting, trapping and by destroying nesting habitat and nesting ducks. This meant that losses represented more than 100% of production. Hence, the population fell, year by year.

Most of the early destruction of nesting habitat occurred in the central and northwestern States; but during, and after, World War I (when wheat was at a premium) much of the nesting habitat in western Canada was destroyed. Huge marshes were drained for agricultural purposes. Potholes, likewise, were dried up—so that the farmer could plough a mile-long furrow. Land, sub-marginal for farming purposes, is frequently ideal for duck production. In the rush for more land (on which to grow more wheat) western Canadians cultivated light, submarginal soil; and drained potholes or destroyed nesting cover around them—



in order to plough as near as possible to the water's edge.

By the late 1920's this destruction had gone so far that the effects were noticeable on the continental duck population. In the early 1930's a devastating drought took place, which further decimated ducks and other migratory waterfowl.

Depleting water areas is a very serious matter, for waterfowl—and for man too, as he has found to his cost.

While nesting ducks were scattered over a million-and-half square miles of territory, there was little danger that one disaster would seriously affect the population, as disasters usually occur in comparatively small areas. Now the majority of nesting ducks are concentrated in 630,000 square miles of territory. The bulk of production is in the southern portion of that territory where climatic conditions are much the same all over it. A serious frost in late May or early June may defertilize 25% of the eggs. An outbreak of botulism can destroy myriads of birds. A single unfavorable hatching season can wipe out the gains of several years.

All in all, by 1935 it looked as though migratory waterfowl were on the way out; that several species would be entirely destroyed; and that duck hunting would cease!

Duck Mathematics

When Ducks Unlimited was organized, in 1938, it must be confessed that very little was known about duck survival problems—and what could be done about them. Many people (probably the majority, including hunters themselves), believed that the shotgun was the only serious enemy of ducks and that it, alone, was largely responsible for the decline in population. Some made allowances for the effect of reduced nesting territory; but even they put the annual take of ducks by Man as the chief reason for population decline.

In 1939 and 1940, personnel of Ducks Unlimited made a study of this problem. Sample areas were established all through the Canadian nesting territory, to find out what happened to the duck population during their sojourn on the nesting grounds. Some very interesting and enlightening data were obtained!

Our figures show that, during those two years, well over 73% of the potential crop was destroyed each year by Man-made and natural factors, before the hunter took his gun out of its case. In 1940 this loss amounted to more than 80 million ducks or potential ducks. That fall, continental sportsmen bagged approximately 12 million ducks; so, for every duck the hunter put in his icebox, approximately seven were destroyed (most of them needless-

ly) on the Canadian nesting grounds alone, during the preceding spring and summer.

The chief loss was from drought, or drying up of shallow potholes and lakes *before ducklings could fly and while adults were in the flightless stage.* This amounted to approximately 20% of the potential crop. Data assembled indicated that crows and magpies destroyed 15%; fire 12%; jackfish 8%; minor predators 7%; floods 3%; agricultural activities 3%; and other factors, 6%.

In addition to these losses on the nesting ground, the survivors faced losses during migration from north to south of about 2%; the legal kill was about 15%; crippling losses 5%; illegal kill 5%; loss on the wintering ground 5%; and loss in migration from south to north, 1%.

We do not desire to underrate the shotgun as a factor in reduced waterfowl populations during the first three decades of the present century. Bag limits, then, were far too high; market hunters shot or trapped millions of ducks every year; illegal kills were enormous. There is still too much illegal shooting; and market hunting has not been entirely eliminated. Nevertheless, much has been done along these lines. It is hoped that crippling losses will be reduced by conservation education among sportsmen and an ever-increasing use of dogs. Legal hunting should be encouraged; illegal and wasteful hunting must be stamped out firmly.

The Solution is "Conservation"

Research on duck losses put our proposals on a rationalistic basis. It was perfectly obvious that if we could reduce natural losses from drought, predators, fire, agricultural activities, botulism, etc., by very small percentages, the kill by sportsmen during hunting season could be greatly increased; and, at the same time, the population could be going up each year towards the desired maximum.

Darwin expresses the idea very nicely by saying, "Add to the checks to increase—and any species will decrease rapidly; lessen the checks even slightly —and any species will increase with startling rapidity." The cure then, evidently, is to lessen the checks to increase.

In general, we concluded that there was no great need to increase the area of nesting grounds—unless that could be done further south where climatic conditions are different and where disasters that might hit the ducks further north would not affect them. We believe that there are now sufficient water areas (and adjacent nesting grounds) for a very much larger population of ducks than we have at present. Unfortunately existing nesting grounds are not safe, due to factors mentioned above. Our objective therefore, is not so much to increase the area of nesting grounds, as to make existing nesting grounds safe for waterfowl. "Lessening the Checks" consists of:

1. Making temporary waters permanent by
   (a) Increasing the drainage area, or
   (b) Reducing the area exposed to evaporation.
2. Establishing a minimum of eight permanent Kee-waters per township in the very important pot-

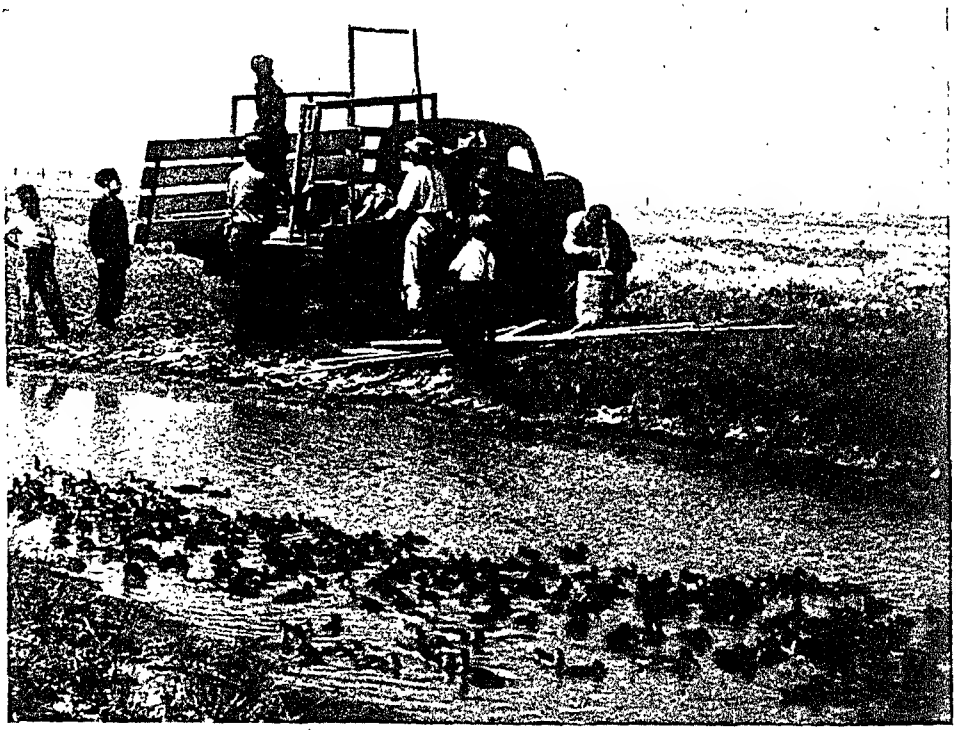
hole country so that, when their home potholes dry up, the ducklings will not have more than a couple of miles to walk to permanent water and safety.

3. Stabilizing water levels in lakes to prevent destruction of nests by flooding.
4. Keeping predators down to reasonable numbers, particularly in favorable duck nesting territory.
5. Reducing fire loss by plowing fireguards around prairie projects, cutting fire lanes through timber, appointing responsible project managers and organizing local people into fire fighting groups.
6. Working to minimize losses from botulism.

We realized right from the first that one small group of men, even if they had plenty of money behind them could not do the job we hoped to accomplish. We realized that it would be necessary to have the cooperation of the governments and people all through the duck nesting territory in order to accomplish our objectives.

Fortunately for Ducks Unlimited we found both the governments and people of western Canada in a very receptive mood. They were as interested in conservation of water and wildlife as those who were sponsoring Ducks Unlimited. That is the secret of our success!

When drought dries up "phantom waters" — and ducklings face death, Kee-men can salvage the broods.



International Action

As the continent's waterfowl population decreased, more people became alarmed that many species would become extinct.

"Conservation" was forcing its way into North America's thinking. It became an international issue. Theodore Roosevelt had called a continent-wide assembly to Washington in 1909. Conservation authorities were created in Canada and the United States.

Conservation all over North America called for action, to save the dwindling waterfowl population. As a basis for international action to save these migratory birds, United States, on the one hand, and, on the other, Great Britain (acting for Canada) entered into a Migratory Bird Treaty in 1916. Pursuant to this treaty, "Migratory Birds Convention Acts" became law in Canada and United States—and the basis for regulations to control hunting.

Waterfowl numbers continued to slide downhill. In March, 1937, the Canadian Department of Natural Resources reported: "continental migratory birds are still depleted, following a succession of dry years which practically removed the southern part of the prairie nesting area as a breeding ground. To conserve migratory waterfowl, shooting is further restricted—*being the only factor immediately controllable by man.*"

Fortunately, other forces were at work to increase waterfowl production by controlling other factors which destroyed ducks, geese, etc. In 1930, forward-looking sportsmen incorporated "More Game Birds Foundation." Following years of progressive game bird decline under auspices of increasingly restrictive legislation, the Foundation in 1931, launched upon *increased production* as the only businesslike alternative, if those resources were to be restored."

After studies covering some years and the greater part of North America, the blueprint for Ducks Unlimited was produced. In Ducks Unlimited, sportsmen, conservators and citizens all over Canada and United States united in international cooperation—to supplement the work of authorities by restoring waters in the Big Duck Factory to peak waterfowl production.

Action in United States

In United States during the early 30's when public opinion was stirred by the rapid disappearance of migratory waterfowl and other wildlife, the government very wisely took steps to establish a strong and efficient government department to study problems of wildlife; and to take all necessary action to increase and maintain useful wildlife populations. At first this Bureau was known as "Biological Survey." Later this name was changed to "The Fish and Wildlife Service."

In 1934 Congress declared a waterfowl emergency and abrogated States rights. From then on, seasons, bag limits, etc., came under direct control of the Federal Government.

Everything that could be done to improve the status of migratory water-

fowl was done. Hunting laws were made more stringent; bag limits were cut from 25 to 10 per day; the hunting season was shortened from three months to 30 days; hundreds of "refuges" or sanctuaries were established along the flyways from the Canadian boundary to the Gulf of Mexico; the public were educated in wildlife conservation; and useful research work was done. In addition, many important ancient breeding grounds were rehabilitated and some new ones established in the tier of northern States, where ducks had hatched successfully before Man had destroyed their nesting habitat.

All this was helpful; but, while action of the Department had a beneficial effect on the duck population, it was strictly limited because the great bulk of birds nested beyond the jurisdiction of the Fish and Wildlife Service. It was perfectly evident that the real cure lay in preventing serious losses on the nesting grounds in Canada.

Action in Canada

Before the natural resources of the Prairie Provinces were turned over to provincial governments in 1930, the Dominion government had a number of migratory waterfowl sanctuaries established in the western Provinces. These were turned over to provincial governments, however the Dominion retained certain supervisory rights thereon.

The Dominion Government had the chief responsibility for well-being of migratory waterfowl; but, in this, they worked very closely with provincial authorities. In close cooperation with the U.S. government, hunting laws in Canada were made more stringent; and were firmly enforced. Limits and open seasons were cut roughly to the same level as in U.S. Large areas in the North-West Territories, still under Dominion jurisdiction, were set aside as inviolate sanctuaries. All these helped waterfowl to some extent.

Sanctuaries without management, however, are necessarily limited in their effects on wildlife. The whole of Canada is a sanctuary . . . until hunting season opens in September. Birds are on the wing in August; and are fairly competent to look after themselves from then on. The serious damage in Canadian nesting grounds takes place before hunting season starts and chief losses occur from drought, predators, fire, etc. Loss from shooting in Canada (whether legal or illegal) has little effect on the duck population.

It was not the function of the Dominion or provincial governments to do duck rehabilitation work. As pointed out elsewhere, the bulk of ducks harvested during open season are killed by U.S. sportsmen; so the major cost of producing the crop should be borne by American duck hunters.

The Dominion Government did what it could to assist Ducks Unlimited. Customs dues on construction equipment were remitted. Much help was provided by the Mines and Resources Department, which had accumulated vast amounts of data on duck range, conditions and production.

Ducks Unlimited Kee-Men

Of all individuals or groups co-operating in this work, our Kee-men have contributed most. Indeed, without them our efforts would have failed. They consist of farmers, ranchers, business and professional men, trappers, Northern pilots, railroad men, commercial travellers, school teachers, government officials, Hudson's Bay Co. employees and many in other vocations throughout the duck-nesting territory. They serve without pay or expenses. Their only compensation is the pleasure they derive from studying Nature; and the knowledge that they are contributing something worthwhile to mankind—and benefitting the life of western Canada by improving western waters.

Kee-girl Kathie Hughes.

Each spring a "Questionnaire" is sent out to our Kee-men—asking for information on surface water and how duck numbers compare with the year previous. This form is returned about June 1 and covers the situation up to that date.

Early in July a "Summer Questionnaire" tells how the broods are coming along; whether water will last all season; the predator situation; whether frost affected duck eggs; what effect flooding has had; and discusses losses by summerfallowing, burning, etc.

In a final "Freeze-up Report" each Kee-man tells us of conditions in their locality as winter comes.

If lakes, potholes, sloughs or ponds threaten to dry up in June and July (before the ducklings can fly) our Kee-man enlists the help of his neighbors or the school children—to salvage the young birds. If the job is too big for

Kee-boy.

Kee-man "Pud" Ball.

him, he lets us know; and we lend a hand.

If botulism breaks out, our Kee-man wires the nearest DU office; and we send a man out to take charge. Usually, however, the Kee-man and his friends do the work of cleaning up the area, tending sick ducks; and burning or burying the dead ones.

Our Kee-man is the district fire-warden; and, when fires break out, organizes the neighborhood to fight them.

Over half of the projects on which we have worked were suggested by Kee-men. Before work starts, they help to arrange for land easements from property-owners whose land will be affected.

Kee-men are our contact people with citizens, generally. They sow the seeds of water and waterfowl conservation among their neighbors.

Something Accomplished

The united efforts of Canadian authorities, our Kee-men and other co-operating agencies and individuals, have helped achieve a veritable "miracle" in water and waterfowl conservation, since DU began work in 1938.

Here are some of the things achieved from April, 1938 to the end of 1945:

1. Invested over $1,000,000 on conservation work, in Canada—mostly in the West.
2. Helped to increase waterfowl until (from the remnant 27 million surviving in 1934) some 143 million flew south in the fall of 1945.
3. Built basic structures (including scores of dams, miles of dykes, canals, ditches, fences and fire-guards, observation towers and patrol cabins) and introduced management on 168 waterfowl production projects . . . or DU Factories.
4. Safeguarded duck nesting and improved duck production on 1,300,000 acres of water, marsh and upland ground.
5. Demonstrated that management yields miraculous results.
6. Liquidated 2,300,000 crows and magpies—as well as numbers of other predators . . . including coyotes, ground squirrels, skunks, etc.

7. Banded 42,000 waterfowl. Returns indicate four new facts:

   (a) Ducks from the Big Duck Factory in Western Canada cross the mountains—to fly down the Pacific flyway.

   (b) Others fly almost due east across Ontario and Quebec to the Atlantic flyway.

   (c) Many ducks hatched on the southern prairies in spring, fly north during summer and early fall.

   (d) Female ducks usually return to their birthplace or where they nested the previous year. Drakes apparently go where their current mates take them.

8. Produced eight three-reel movies, showing DU conservation work —as well as many one and two-reel educational pictures.

9. Shown our annual movie of DU work in western Canada to 2,000,000 fans over the United States, each year.

10. Shown our conservation movies to over 1,000 audiences in Canada —including service clubs, sportsmen's meetings and schools.

11. Given over 700 radio broadcasts on conservation work in Canada.

12. Distributed over 600,000 printed folders, booklets, circulars, etc.— telling about "The miracle of conservation" being achieved in the Big Duck Factory.

13. Assembled from Kee-men over 20,000 survey reports of water and duck conditions in specific neighborhoods.

14. Personnel have travelled by car, truck, plane, train, canoe, snowshoe, dog-team and saddle, over hundreds of thousands of miles on reconnaissance, surveys and studies . . . over most of the 631,000 square miles of the Big Duck Factory . . . as well as on Pacific and Atlantic Coast duck ranges.

15. Assembled more facts of waterfowl production than ever before centered at one office.

16. Developed and accelerated conservation thought, discussion and action throughout Canada; and over the continent.

17. Generated understanding and goodwill among folks all over North America.

18. Given the world a lesson in effective voluntary cooperation for the common good.

These are some of the things that have been done. They open the way to expanding achievement in the future. They herald a new age . . . the age of conservation!

Objectives and Results

Results of DU work are abundantly evident. Our good neighbors in the U.S. contributed their dollars for investment in work on the Big Duck Factory in Canada for one definite purpose. That purpose is: "to increase and perpetuate waterfowl so that the sport of duck hunting shall be enjoyed by more people all over North America."

Most of our contributors enjoyed good hunting in their youth. They want to assure the same advantage to their sons—and to posterity. Their ob-

jective is well on the way to fulfilment. Of course, greater areas must be safeguarded, year by year. Management must be developed over the whole Big Duck Factory to ensure a plentiful supply of water and waterfowl.

Our contributors include:

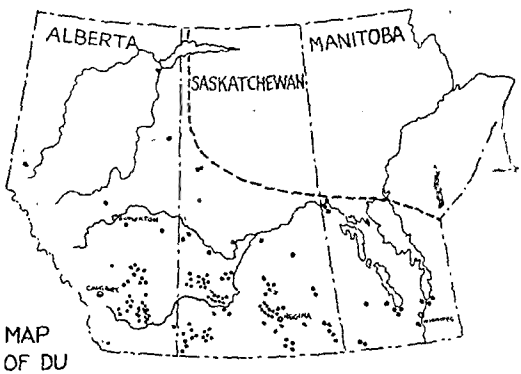
(1) Sportsmen.

(2) Nature Lovers—who aim to save waterfowl and other varieties of migratory wildlife to make certain Nature's wild creatures shall be perpetuated for the enjoyment of mankind.

(3) Conservators—who are sincerely interested in all phases of conservation.

The sportsman has reaped rich returns on his investment . . . in increased waterfowl flights.

The work of DU has helped safeguard waterfowl – and practically all migratory birds, including shorebirds and many varieties of songbirds. In addition, of course, many species of non-migratory birds and mammals have been greatly increased by these efforts. It is evident, then, that the nature lover who has contributed towards this worthy cause has received handsome dividends from his investment.



MAP OF DU PROJECTS- AS AT 31 DEC. 1944.

Likewise the conservator has both made substantial contributions to this work; and has reaped satisfying returns therefrom.

Canadians have invested wealth as well as Americans. Indeed, for every dollar sent to Canada in cash by our American friends, Canadian governments and people have invested at least $10 in land, services and cooperation. What did they hope to receive from these investments?

There are many sportsmen, nature-lovers and conservators in Canada whose objectives are similar to those of their colleagues in U.S. They have reaped similar returns.

Other benefits have accrued to Canadians from the investment of cash and cooperation in DU work. Many look on DU as a vital work in conservation of Canadian resources.

Our water and wildlife conservation projects have greatly increased production of fur, particularly the all-important muskrat. Many of the waters DU has restored or created are also available for livestock. Right now, thousands of cattle use pastures which were useless before our Kee-waters were established. Further, the water-table for miles surrounding our reservoirs has been raised—with excellent results to crops, wild hay, farmers' wells, etc.; and the beauty of the country has been enhanced by establishing these surface waters, particularly in dry prairie country.

DU fireguards, firelanes and fire-fighting activities have protected much vegetation and timber. Predator-control campaigns in which DU co-operated, have increased upland game and songbirds. By precept and example, our cooperators and we have impressed on the people of western Canada the need for full conservation. Hence, those who have invested cash, land, services and cooperation have all received substantial dividends.

Interesting Discoveries

One of our first jobs was to find out relative duck-nesting densities in different parts of the country; and why waterfowl preferred one region to another.

As a preliminary, we carried out two surveys from the Rocky Mountains on the west — through the prairie and parkland country — to the pre-Cambrian Shield on the east.

We found duck-nesting practically nil in the mountains; that it rose sharply to a peak on the prairies or parklands east of the mountains; and gradually declined to almost zero, again, in pre-Cambrian country. This was an interesting fact; and we proceeded to find out why.

By examining hundreds of ducklings—and by studying research work of other authorities—we found that ducklings live almost entirely on aquatic animal life during their first six weeks of life. Apparently, the metabolism (body-building processes) of the juvenile is so rapid that it must have this high protein food to thrive.

Studying the quality of surface waters throughout nesting territory, we found the hydrogen-ion concentration rose from acid, or neutral, point in the mountain lakes to an alkalinity of about pH 9 in the big production country; and then back to neutral point (pH 7) and, indeed, on to an acid condition around pH 6 in pre-Cambrian country.

Aquatic animal forms were found to be scarce in neutral or acid waters; but were at their maximum where the alkalinity was moderately high (between pH 8 - pH 9). Indeed, we found that prairie alkali water produced many times as much aquatic animal life per cubic foot as did neutral or acid waters at either end of the duck-nesting range.

Basic food for ducklings appears to include the water flea (Daphnia) and other crustaceans; but they also relish mollusca, and other forms of aquatic insect life.

That seems to be the reason why a great majority of mother ducks establish their nests in alkali water country. They know that when their broods hatch, there will be plenty of suitable food for them. Unfortunately, prairie country is dangerous too—as 90 per cent of the small surface waters dry up in many years, before ducklings can fly. One would think that through generations of losses, ducks would gradually acquire the instinct of going to safer territory. The fact that they do not do so, probably indicates that, in the long run, sufficient food of the proper type is more vital, even, than permanent water.

Formerly, there was an impression that migration was rather simple: that the birds came north in spring; established their summer homes on the prairies, parkland or northland; raised their broods to maturity; played around for awhile—fed and fattened; and then flew south—to winter around the Gulf of Mexico and along the Atlantic and Pacific coasts.

More adequate studies proved it was not so simple as that!

At first, we made an aerial census in August. At that time, we found vast numbers of waterfowl in the Northland—at Lac la Biche, over the Central Lakes and on the huge Athabaska Delta. In prairie and parkland country further south, there were only moderate numbers at that time of year. We assumed, of course, that the ducks had been raised pretty well where we found them in August, apart from the adults that had come in during spring migration.

Subsequent observations showed that birds banded by us were shot a month or so later, north of the banding stations. In some cases hundreds of miles north. Adults and juveniles of

both sexes took part in these northward movements. Evidently, there is a movement northward each summer after the juveniles are a-wing. How big this is we still do not know; but indications are that it is considerable.

Why do birds move northward during summer? Ducks, like men, go where their preferred food is most plentiful. That seems to be why so many birds nest on prairie and parkland country in spring. They anticipate the enormous quantity of aquatic animal food available for their broods and themselves at that time of year.

When ducklings are about six weeks old, however, they are becoming vegetarians; and, by the time they can fly, they greatly prefer vegetable food. In July, vegetable duck food is relatively scarce on the prairies—but is abundant further north; so, large numbers of ducks fly north and fatten on the splendid vegetation there. That relieves the prairie country for awhile; and, by the time ducks head south in September and October, there is sufficient vegetable food to carry them through until freeze-up, when they are forced further south.

Duck Census Survey

An important part of DU work is the annual census survey. This survey is carried out, each year, to determine the "population trend" of waterfowl—and the condition of waters over the Big Duck Factory. Such an annual stock-taking and estimate of population is part of the foundation of management of waterfowl and water resources.

Migration is erratic as the vagaries of water, food and weather, each fall. Certain parts of the continent see many ducks one fall—and few the next.

There is a tendency for sportsmen in States where ducks are plentiful in one particular season, to claim that our estimates are too low. On the other hand, sportsmen in States where ducks happen to be scarce, may complain that our estimates are too high.

Each fall, hundreds of Kee-men in Canada send in "Freeze-up Reports." Each winter, hundreds of sportsmen all over United States fill out and return questionnaires. In general, the information so assembled has borne out our population trend or census survey of the previous summer.

Our estimates of duck population are based, chiefly, on reports from our Kee-men and DU personnel. Most of our Kee-men each look after a township (36 square miles) of duck-nesting country. Many get their friends and neighbors to help in the duck census survey. We send them forms. They go out; and carefully count the ducks, showing species, broods, etc., on sloughs, potholes and other waters in their territory. Other similar territory (where we do not have Kee-men) is appraised accordingly. In the Northland, we usually charter planes for some ten days; and cover the same territory each year. Waterfowl are counted here—and estimated there. Again, similar territory that we have not covered by plane is appraised. Thus a population estimate is worked out for every section of the entire Big Duck Factory.

This method, while not truly a "census," definitely gives dependable indications of "increase or decrease" in duck population. It is probably accurate to within, perhaps, 10 per cent.

It is much easier to take a duck census survey on the nesting ground in

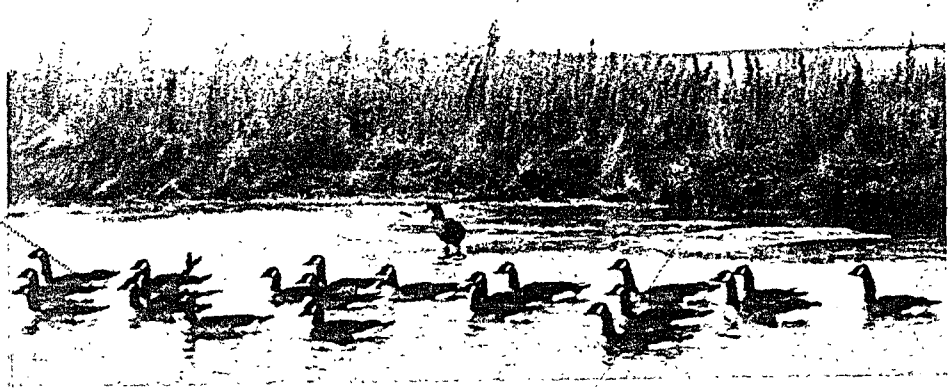
Ducks on DU Factory.

July than on the winter grounds in February. When one looks at a huge concentration area on the wintering grounds, it is obviously a most difficult task to estimate the number of ducks. Two men appraising a large duck-laden lake in late fall or winter will probably be far apart in their estimates.

The situation is entirely different on the nesting grounds in summer. Most potholes and sloughs are small, with meagre aquatic vegetation. The Kee-man counts 25 ducks on this slough, 110 on the next, and so on. Birds are scattered; and there are no great concentrations in July—when our Kee-men make their survey. Moreover, most of the ducks are immobile —as juveniles cannot yet fly; and most adults are in some stage of moult.

Cooperating in the annual census survey of waterfowl is one of the most useful contributions made by our Kee-men.

Canada Geese resting on DU project.



Crop Damage

In western Canada grain crops are pretty well harvested before ducks (chiefly mallards) start feeding on stubble fields, in normal years.

Then comes a year when spring sowing is late or when bad weather interferes with, and delays, harvesting. In bad years, mallards by thousands congregate on an individual field where grain is in windrows or stooks; and they sometimes do tremendous damage to the individual owner.

If ducks were reasonable and distributed themselves all over the crop country, say 20 or 30 per quarter section, losses would be unnoticed. Unfortunately, they are gregarious; and they insist on visiting one field at a time. Loss to Canada is ridiculously small; but loss to individual farmers, here and there, is sometimes considerable.

Many methods of reducing such losses have been suggested and tried out. Some are fairly effective; and others are a waste of money and effort.

Various devices have been developed by the U.S. Fish & Wildlife Service and other agencies. In western Canada, however, the individual farmer so seldom suffers, that the hazard rarely makes it worth his while to invest in such equipment.

The Migratory Birds Convention Act and Federal Regulations provide that:

"If any of the migratory game, migratory insectivorous, or migratory non-game birds should under extraordinary conditions become seriously injurious to agricultural, fishing, or other interests in any particular locality, the Minister or any person duly authorized by him, may issue Permits to kill such birds so long as they shall continue to be injurious. Applications for such Permits shall include a full statement describing:—

(1) the species and an estimate of the numbers of birds committing the damage;

(2) the nature and extent of the damage;

(3) the extent of the agricultural or other interests threatened or involved.

"Such Permits shall be revocable at the discretion of the Minister. On the expiration of the permit the person to whom it is issued shall furnish to the Minister, a written report showing the number of birds killed, the dates upon which they were killed, and the disposition made of the dead birds.

"No birds killed under such Permits shall be shipped, sold or offered for sale."

The most effective method found so far during the legal hunting season, is based on the cooperation of sportsmen. Often the clerk in each municipality acts as liaison between farmer and hunters. Immediately a farmer finds that ducks are damaging his crop, he phones to the clerk. The clerk, in turn, gets in touch with a group of sportsmen. They put on a shoot in that farmer's grain field the same evening. This method has been found extremely effective; and, moreover, provides mighty good sport.

During war years, shell shortage allowed very few sportsmen to respond to such calls. Now, however, with sufficient ammunition, effective protection can be given to crops in any locality where weather conditions invite ducks to do damage.

Plans for the Future

Since DU began restoration work for waters and waterfowl, a good start has been made. Nevertheless, all that has been achieved is only a beginning. There is much yet to be done.

First, DU plans to safeguard at least 3,000,000 acres for the ducks on the great nesting grounds in the prairie and parkland country of Alberta, Saskatchewan and Manitoba—by water conservation and management over this great area. As money, personnel and transportation become available, the work will be extended to embrace all waterfowl nesting territory in Canada.

With the help of sportsmen and governments, DU will try to keep the predator population down to a point where they will not seriously interfere with production of waterfowl, upland game and songbirds. We hope to prevent many fires that now destroy countless waterfowl and other wildlife. We plan to stabilize surface water in many huge areas where flooding destroys ducks' nests and young muskrats. Plans include also, the restoration and creation of permanent waters to battle drought. Finally, DU will continue to work to expand the cooperation of farmers, ranchers, officials, hunters and all citizens to reap fullest benefits for all from this great work.

Ducks Unlimited cannot hope to do this tremendous job alone, no matter how much money we have at our disposal. DU work needs continued full co-operation of Canadian governments and people. This conservation effort, covering so vast a part of North America, requires at least 5,000 competent Kee-men and women. So—if you are a Kee-man now, will you continue your good work? If you are not yet a Kee-man—but are in a position to help—we ask you to volunteer.

Ducks massed over ponds provided by Gebauer Bros. —one of many sanctuaries created by Western farmers.

Living Memorials

Now that war has brought Victory to us, we'll be thinking about memorials.

Here is a suggestion worthy of consideration by our Kee-men—and all sincere conservators:

Following World War I, memorials were raised in neighborhoods, from end to end of the country. Mostly, these were of stone, concrete and metal. This is good. Throughout his history, mankind has striven to make permanent the memory of sacrifice for victory.

In this war, however, a different motive was felt by millions of people. Their purpose was not victory alone; not fear of defeat; not merely determination to survive. They wanted something more than all these. They fought for . . . opportunity for a better life.

It would seem, therefore, that the time has come for living memorials—for those who sacrificed for victory! Living memorials which shall honor the fallen; help those who have come home to us; and be good for everyone!

What better memorial than living water — amid lush grass and growing trees? An oasis of natural beauty in the drought-blasted prairies; a haven for wildlife and people.

The regions embraced in the Big Duck Factory were once dotted with scores of lakes and cut by hundreds of streams. Many of these are fast disappearing; many have become transient "phantom" waters; many have entirely disappeared. Countless lakes and streams, now disappearing, can be saved. "Phantom waters" can be made permanent. Former waters can be restored.

Simple, sane methods of land, water and forest management can build such waters into the foundation upon which to build permanent living memorials —profound in their capacity to reverence our dead; magnificent in their usefulness to the living.

Almost every neighborhood presents some opportunity for developing waters, woods and grasslands into such a memorial—living; eternal; natural!

How better can conservators, nature lovers, hunters, all citizens, express their thankfulness for victory; their hopes for peace and the better life, than by building and developing such Memorial Parks?

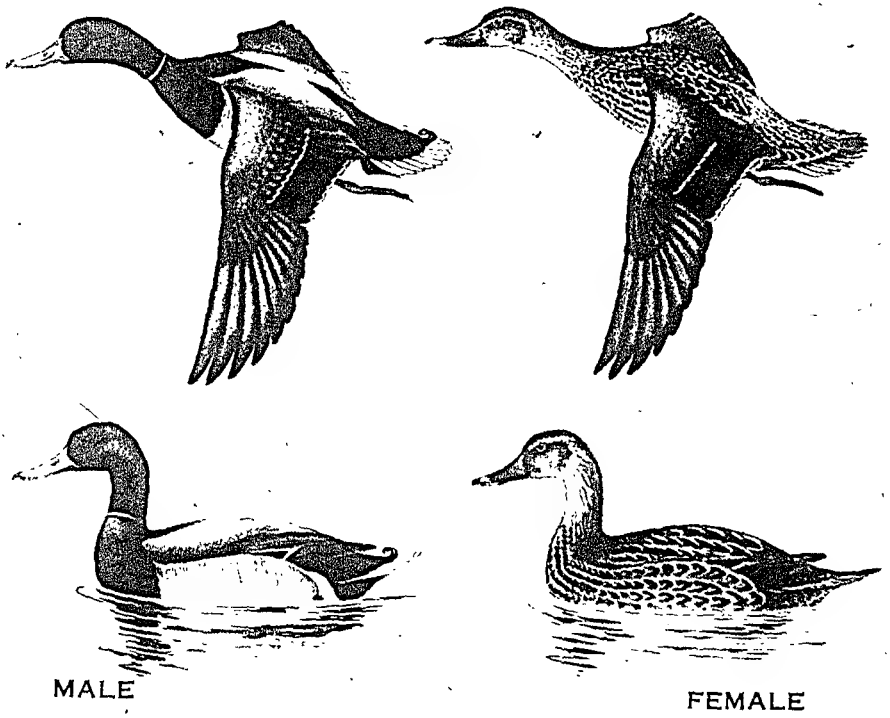
Wherever waterfowl can be an integral part of such a living memorial, DU will be proud to share in its creation and maintenance.

Kee-men in many neighborhoods know old lakes, ponds or streams where flood waters can be held at permanent depth—once necessary dams, dykes and canals are built. Often, these sites are in blocks of land which can serve the community better in producing trees, fish, wildlife, recreation—than in growing farm crops.

"Waste" lands can become the most valuable of all acres to community, country and continent—once permanent water is established (with fish in the deeps, and ducks, muskrats and beavers on marshy margins; with trees all around, to guarantee shelter and food to wildlife, and provide shade for recreation and wood for use; with wildlife abounding, for food and enjoyment).

Any DU Kee-man (or other sincere conservator) who helps establish such a neighborhood Memorial Park will render a real and eternal service to his community.

DU has cooperated actively in several such community projects. We are glad to help Kee-men, wherever possible, to develop such living Memorials . . . to those who gave their lives for Victory; and for those who still have their lives to live for the community.

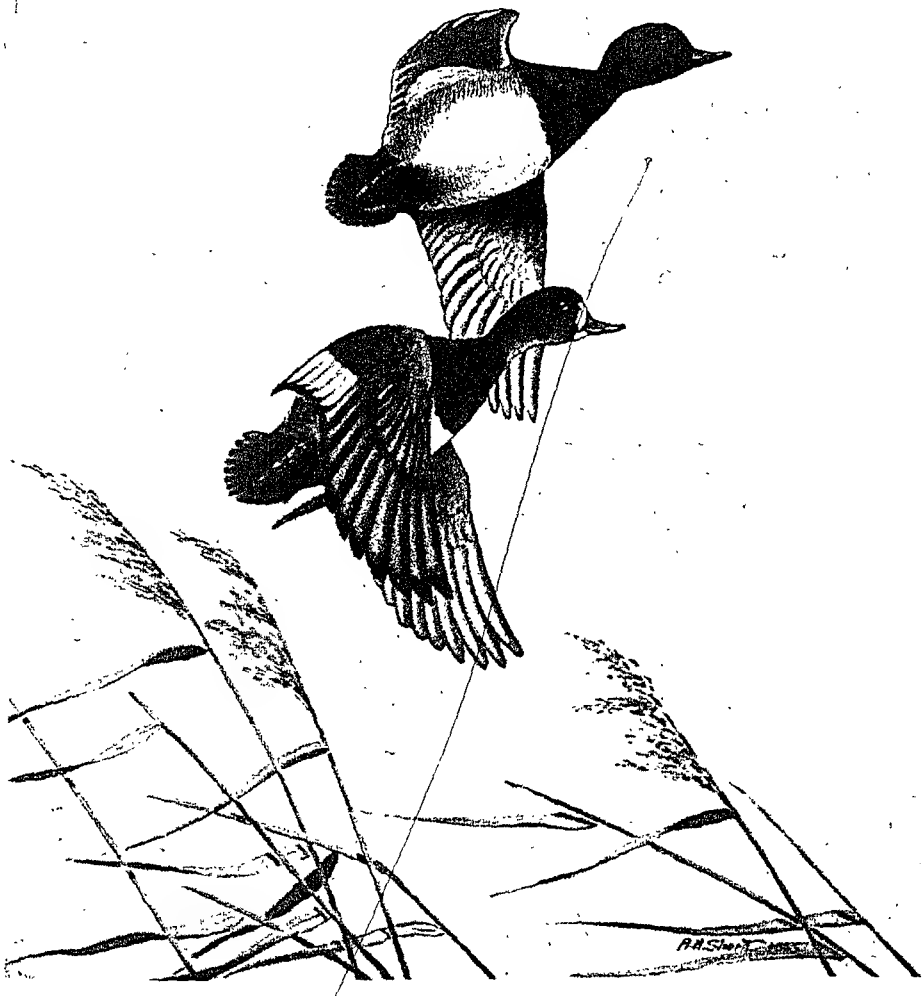


The Mallard

The world's most important duck. Outnumbers any other species. North American Mallard population in 1945 probably in excess of 40 million. In Europe and Asia it is the No. 1 sporting duck; and is also domesticated on a large scale. In China, particularly, it is an important source of food, eggs, and feathers.

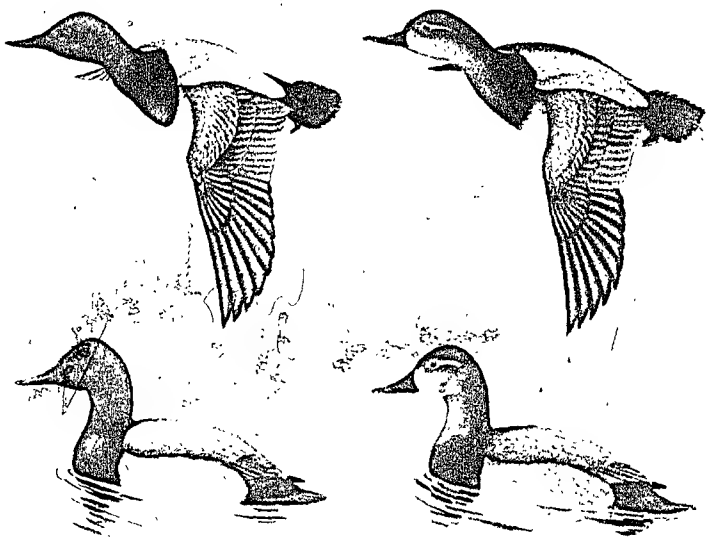
The Pintail

The American Pintail is second only to the Mallard in abundance. In 1945 the population was probably not less than 20 million. The most wide-ranging of all our ducks, breeding north to Hudson Bay, the Arctic Coast and west to Alaska.



The Bluebill

There are two "Bluebills:" the Greater Scaup—which occurs throughout the Northern Hemisphere; and the Lesser Scaup (pictured above) which is found only in North America. The "little Bluebill" is the common bird of the interior; and provides good sport at (or just before) "freeze-up." It is often called "Fall duck."



The Canvasback

The "Can" holds top rank, with the Mallard and Pintail, in the sportsman's favor—particularly on the Atlantic Coast from Delaware south, where it winters in large numbers. Its favorite food in the East is Wild Celery, which imparts a fine flavor to the meat.

Need for Trained Men

Following Victory — comes rebuilding. For rebuilding we need to develop and use every source of production and wealth.

We have great wildlife resources. These wildlife resources were so abundant, formerly, that inexhaustibility was taken for granted. They have been depleted. As other resources claimed exclusive attention—wildlife was side-tracked—wasted—neglected—destroyed.

Recently, we have begun to develop management of some of our wildlife resources. Wildlife has responded miraculously. Returns already reaped emphasize that our wildlife (and related resources) can produce multiplied wealth; and provide opportunity for thousands of people—*if we develop these resources under management.*

The restoration of our wildlife resources and their development to produce multiplied wealth—has lagged fundamentally — *because practical knowledge* and *trained personnel have been lacking.*

Wildlife management can give many thousands of war veterans the opportunity they need — to establish themselves in civil life; achieve a competence in satisfying, outdoor life; and share in producing wealth. Many veterans are hunters or fishermen. Many more have developed a preference for outdoor life. Many have incurred disabilities which make outdoor occupation necessary, or desirable. Training in wildlife management is a new branch of education.

Technical training is the basic need in management of natural resources—to produce fullest returns in wealth. Education, research and experiment at selected centres will go a long way toward solving the problems of wildlife conservation — and reaping from "management" bumper harvests of opportunity and wealth.

A training program in wildlife management for veterans (and others) would serve the need for developing these resources to yield the greatest wealth—and the need for providing opportunity for veterans and war workers to re-establish themselves.

International Aspects

Ducks Unlimited is an international crusade in the common cause of conservation—from which all the people of North America shall benefit.

DU is the first movement on record where a group of citizens in one country has cooperated with Governments and citizens in another country without treaties or red tape of any kind.

DU is a purely voluntary, non-profit organization—built up for a single purpose: conservation of water and waterfowl. That purpose is being achieved. Furthermore, benefits from the work of DU are being reaped—far beyond that prime purpose.

For instance: people all over North America are learning more about a great continental waterfowl resource —and are becoming acquainted with the Big Duck Factory in the Canadian West.

Perhaps the most important result is that this DU work is bringing close together, people on both sides of the line which unites Canada and the United States.

Operations in All Canada

The bulk of North America's waterfowl are hatched in the Big Duck Factory. At the same time, considerable numbers are hatched in other regions in the northern half of the continent. The Black Ducks, particularly, scatter their nesting over a big chunk of the northeast of the continent; around Hudson Bay, in Ontario, Quebec and the Maritime provinces.

This grand bird provides much of the best sport for hunters along the Atlantic coast. As duck production conditions have been improved in western Canada, the Black Duck appears to be steadily extending his breeding range into Manitoba and the Northland. Nevertheless, while other species have multiplied; and migrated in increased masses along all the continent's flyways, the Black Duck has lagged.

Over many years, authorities have carefully studied waterfowl nesting and movements in eastern Canada; and assembled much information on the Black Duck—and other species.

Now, DU has begun work to bring together available data; and study the area further—aiming to determine if management measures can be developed to help increase production of Black Duck and other waterfowl.

In the spring of 1945 a Maritimes manager was appointed: opened an office; and launched a survey study. The cooperation of outstanding authorities on wildlife management has been enlisted. The work will be carried on—and will be extended to Quebec and Ontario.

In British Columbia, DU has made preliminary studies. Activities will be extended in this direction in due time.

Beginning restoration work in 1938, DU has concentrated on the Big Duck Factory. This policy was dictated, partly, by wartime shortages of personnel and equipment; but was determined even more by the need for protecting the decreasing remnant of duck population from drought, predators, fires, etc. As production has been improved on the Big Duck Factory, output has multiplied. Now . . . with restoration work well launched in western Canada . . . and with personnel and equipment available — DU plans extended activities over the rest of the country.

Need for More Ducks

There is a real need for more ducks —and more duck waters!

The population of North America is steadily increasing. The expansion of industry and the multiplication of material wealth means greater leisure. This, in turn, means that more people will seek recreation in hunting and fishing and the outdoors.

Millions of war veterans are coming home. These men and women have acquired skill with firearms. Great numbers of them will want to hunt.

It is safe to estimate that the number of duck hunters in North America will increase from around 1,500,000 . . . up to, perhaps 2,500,000. To assure that number of hunters full benefits from this great outdoor resource, the duck population of the continent must be increased to some 250 millions—and maintained at that level.

This can be done—in complete balance with other industries and interests. Millions of people all over North America will benefit in wealth and health from such conservation work in water and waterfowl.

Know Your Ducks

Conservation must be built upon observed facts. The vital usefulness of every Kee-man is measured by his ability to observe fully and report accurately.

This entire Kee-Manual is designed to help Kee-men do just that. The pages following will help, particularly, in accurate identification of species.

Ducks are divided into two groups: (a) The Surface-feeders, variously called Pond ducks; River ducks; dabblers; Puddle ducks; Tip-up ducks and (b) Diving ducks, also called Sea or Deep-water ducks. These descriptive terms refer to the feeding habits of the two groups. Observing the feeding habits of ducks whose identity is sought, quickly classifies them into one of the two groups. The next step is to look for characteristic plumage markings. These are shown in the plates which follow. In the text, the distinctive markings which separate a species from any other are printed in italics. These are what we call "Field Marks." Once they are learned, identification is greatly simplified.

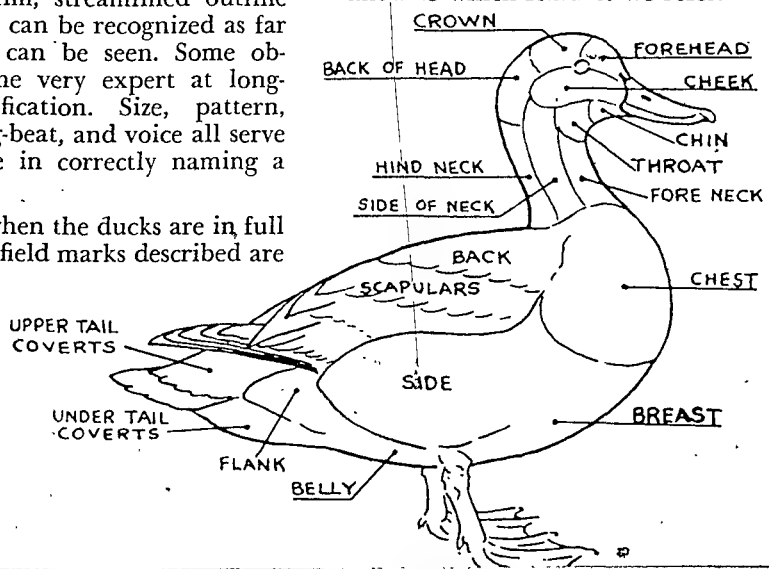
There are many other useful methods of identifying birds under varying conditions. At distances, the form or outline enables an observer to accurately name ducks when only the silhouette can be seen. For instance, the long, neck, slim, streamlined outline of the Pintail can be recognized as far as the birds can be seen. Some observers become very expert at long-range identification. Size, pattern, speed of wing-beat, and voice all serve their purpose in correctly naming a species.

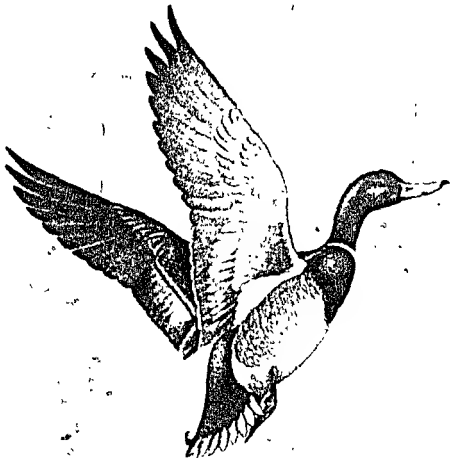
In spring when the ducks are in full plumage, the field marks described are most noticeable. After the moult which starts in June and lasts until late fall, the field marks are not so prominent, and, for a time, may be absent. In full moult (eclipse plumage), many males look much like females. In July and August, many juveniles in various stages of development are around. All have their distinctive markings which can be learned by the intent observer.

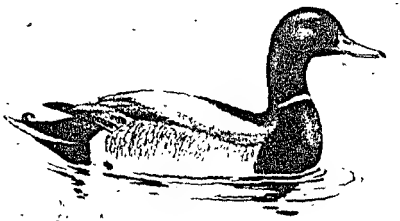
During the hunting season, opportunities to handle many different species occur. At that time many are juveniles or adults in obscure plumage. Correct identification can be made by careful examination.

First look at the hind toe. If it has a narrow lobe, it is a surface-feeder; if a broad lobe, it is a diver. (See illustration on Page 39.) Next, look at the wing patch (speculum) which is present and recognizable in most adults in all stages of plumage. These two features will serve to identify most species. Color of feet and bill, shape of head and bill, eye color, size and weight are features to be checked to confirm the identity of specimens in puzzling plumage. Experience is the greatest teacher.

To assist in following the text descriptions, here is an outline of a duck showing the topography. The parts named are marked off so that you will know to which features we refer.







MALE

FEMALE

Mallard

(Anas platyrhynchos platyrhynchos)

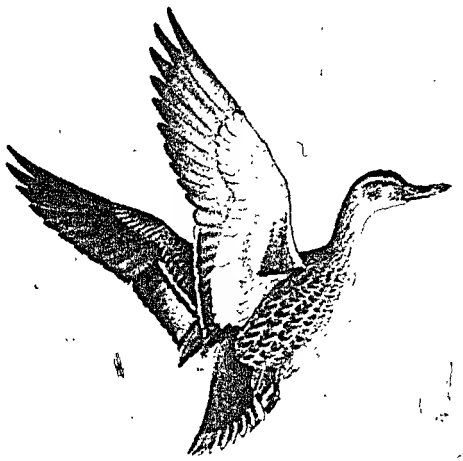
OTHER NAMES — Greenhead; Wild Duck.

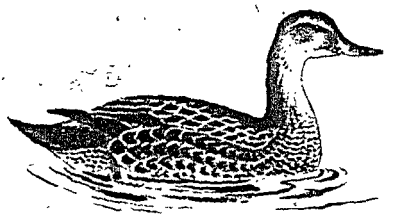
Field Marks

IN FLIGHT:

Male—Heavy build. Large size. Head long — iridescent green. Purplish-blue wing patch (speculum) bordered fore and aft by *two white bars.* Tail feathers white. Below—general greyish appearance, with dark breast, greyish belly. *Wing linings—pure white.*

Female — General brownish appearance. Lacks green head, otherwise similar to male. Speculum and white bars and tail not so prominent.





ON THE WATER:

Male—Rides high. Green head. Narrow white collar around neck (incomplete behind). Light grey above divided by dark stripe lengthwise. Purplish-blue wing patch (speculum) bordered fore and aft by white bars. Greenish bill.

Female—Rides high. General brownish mottled appearance. Wing patch same as male but colors more subdued. Yellowish bill.

The field marks which distinguish male and female mallards from any other species are the *two white wing bars* fore and aft of the purplish-blue wing patch (speculum).

Black Duck

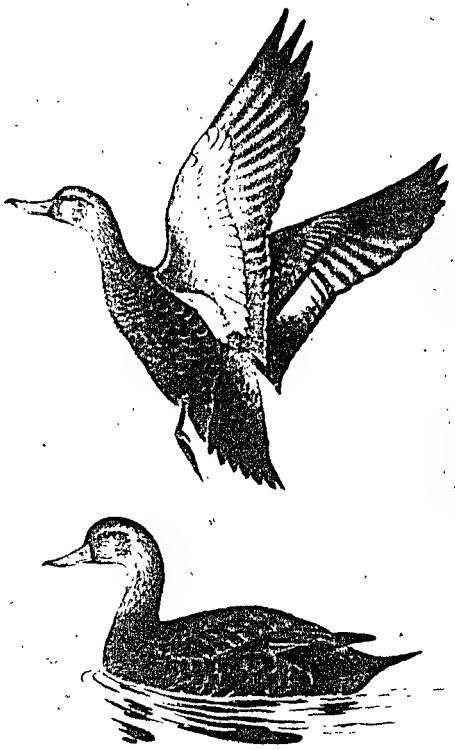
(Anas rubripes)

OTHER NAMES: Black Mallard.

Field Marks

IN FLIGHT:

Sexes alike. Large size, heavy build. Uniform dark brown duck with *pure white wing linings* in striking contrast to the dark plumage. Purplish wing patch with one narrow white bar on the trailing edge. Feet—often seen as birds take to wing—variable, yellowish-orange to bright orange-red.



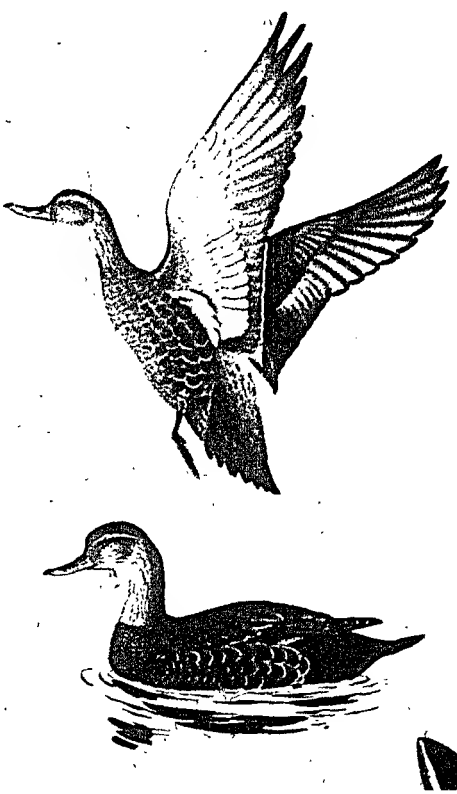
MALE

FEMALE

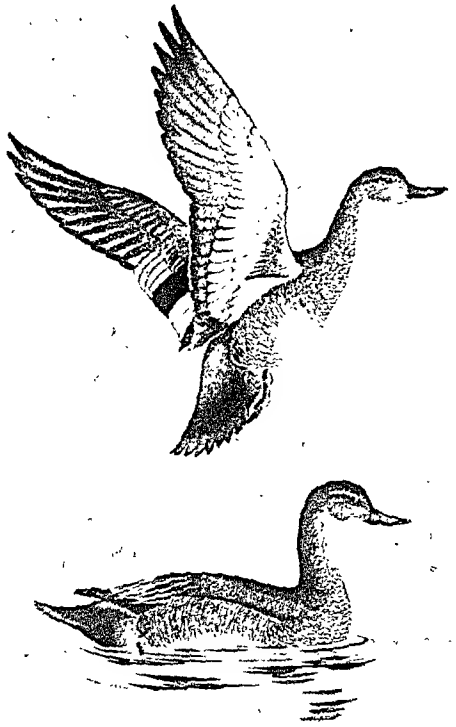
ON THE WATER:

Sexes alike. Rides high. Large size. General dark brown color—paler on head with dusky line through eye. Deep purple wing patch with *black* bars in front and behind and *one narrow white bar* on the *trailing* edge.

The bill of the male is yellow or yellowish-red: that of the female more greenish-yellow.

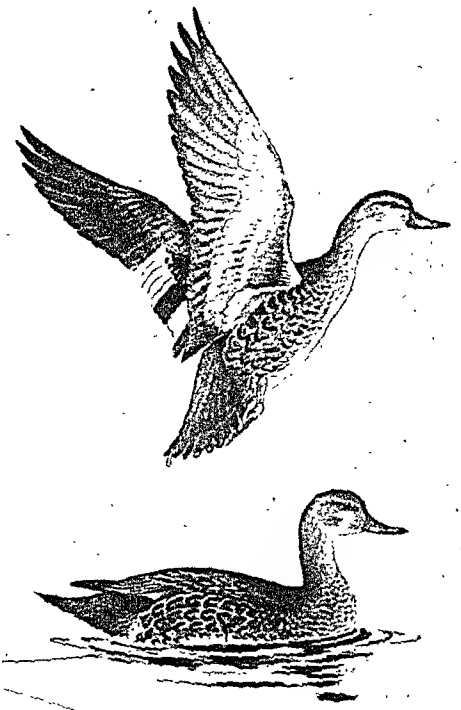


Black ducks are the only large ducks in Canada in which the two sexes are alike in appearance. The uniform dark brown color relieved only by *one narrow white bar* on the hind margin of the purplish wing patch is distinctive. The pure white wing linings are in startling contrast to the dusky plumage but this feature is present in the common Mallard, the female of which might be confused.



MALE

FEMALE



Gadwall

(Chaulelasmus streperus)

OTHER NAMES: Gadwell; Grey duck.

Field Marks

IN FLIGHT:

Male—Medium size. Small head. General greyish appearance with *prominent, rectangular white wing patches on the hind edge of wing close to body*. Rear end of body jet black. White belly. Yellowish-orange feet which may be seen as bird takes to wing. Whitish wing linings.

Female—Neat slender head and neck. General appearance dark grey. Similar white wing patches as in male but not so pronounced. Legs and feet pale yellowish. Whitish wing linings.

ON THE WATER:

Male—Rides high. Medium size. Greyish head and neck. Body greyish—*rear end velvety black*. White patch of wing, high up on side towards hind end, not always visible. Bill, bluish-black, shorter than head which gives a small, neat profile. Legs and feet yellowish-orange.

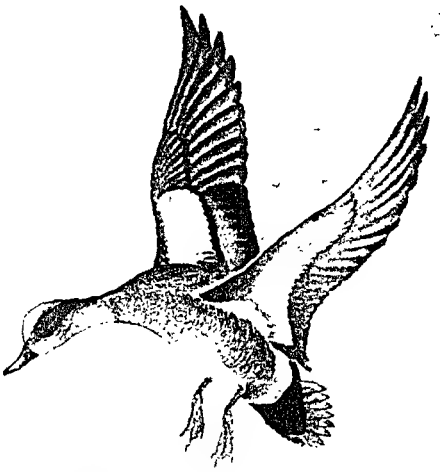
Female—Rides high. Light slender build, small, neat profile. Greyish head and neck, browner on body. White patch of wing not so prominent as in male—usually concealed. Bill orange. Legs and feet yellow.

The white, rectangular wing patch close to body tags both sexes without doubt. It is the Gadwall's best field mark in flight. On the water, the greyish overall appearance and small, neat head is distinctive. Coupled with black rear end of male, and yellow bill, legs and feet of female, no mistake should be made. Confusion most likely to occur between female Mallard and female Gadwall.

Baldpate

(Mareca americana)

OTHER NAMES: Widgeon, Baldy.

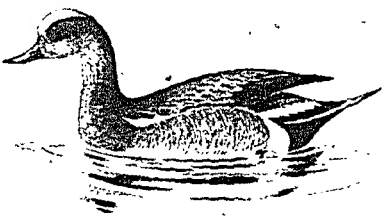


Field Marks

IN FLIGHT:

Male—Medium size. Light, slender form. Conspicuous white "shoulder" patches on fore part of wings. White below. White wing linings. White forehead and crown visible when coming head on.

Female—Similar but without white cap of male. The white wing patches on forepart of wing are prominent.



MALE

FEMALE

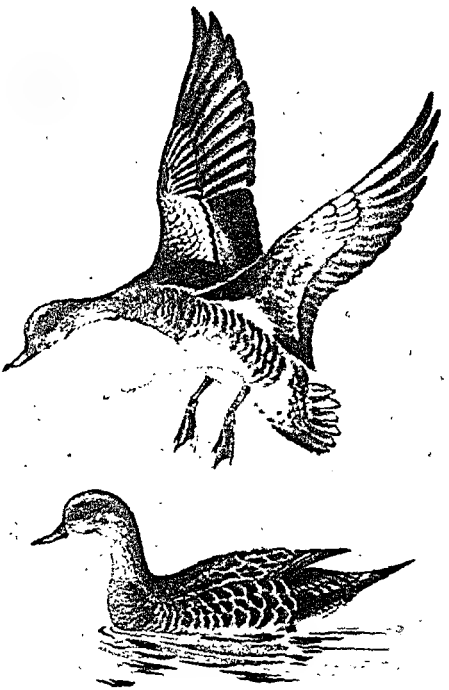
ON THE WATER:

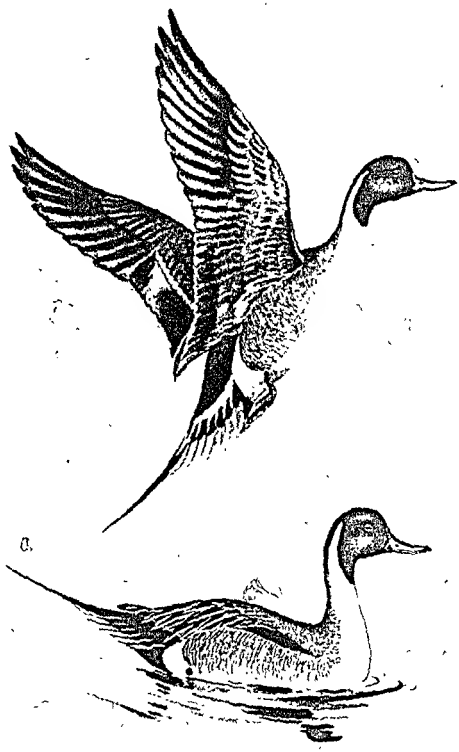
Male—Staring white forehead and crown. Medium size. Light build. White wing patch often concealed. Pinkish-brown back, darker to rear end. Sides rich, cinnamon brown separated from black tail-end by a bright white patch. Bluish-grey bill, legs and feet.

Female—Grey head and neck speckled with brown. Brownish body. *White under tail. White streaks on folded wing.*

The best field marks in flight for both male and female are the bold, white, oval shaped wing patches on the "shoulder."

On the water, the male's white forehead and crown are distinctive.





MALE

FEMALE

Pintail

(Anas acuta tzitzihoa)

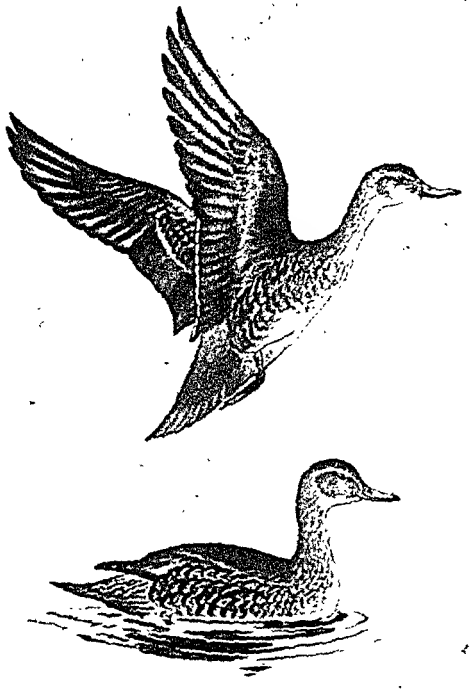
OTHER NAMES: Sprig; Longneck.

Field Marks

IN FLIGHT:

Male—Pale brown head, long slender neck, grey back, *white underparts*, long pointed tail feathers. Streamlined form. Greenish speculum bordered by a buff bar in front, *a white bar* behind. The prominent wing feature is *the one white bar on the trailing edge*. Outer tail feathers greyish white.

Female—A dull grey-brown bird with *long slender neck*. No pronounced wing pattern but white bar on trailing edge of wing patch shows up at close range.



ON THE WATER:

Male—Rides high. Grey back. All white breast. Dark head. *Long, slender neck. Long central tail feathers. One white bar on trailing edge of wing patch.*

Female—Rides high. *Long neck.* General brownish appearance. Small, neat head with slate grey bill.

The long, streamlined profile of the Pintail is the best field mark in flight. The male's dark head separated from the body by the long white neck presents a contrast peculiar to this species.

The female's outline and *one white bar on hind margin of wing patch* are definite field marks.

Wood Duck

(Aix sponsa)

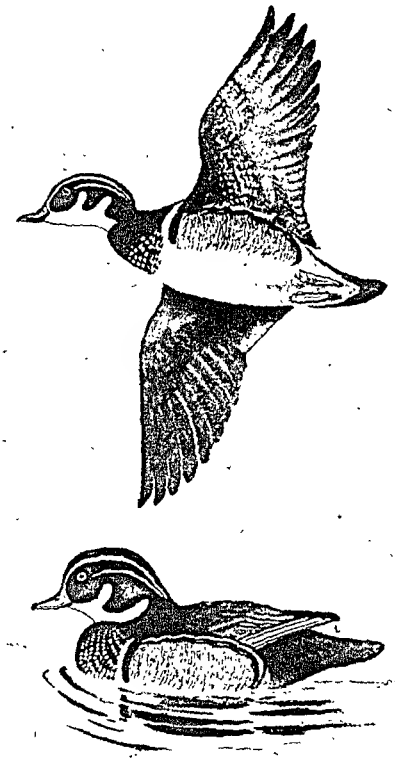
OTHER NAMES: Woody.

Field Marks

IN FLIGHT:

Male—*Crested head,* white throat and belly. *Fairly long, wedge-shaped tail* are best field marks. Narrow white stripe on trailing edge of wings. Bill pointed down.

Female—Dark back, white belly. *Fairly long wedge-shaped tail.* Bill pointed down. *Crested head and white spot around eye.*



MALE

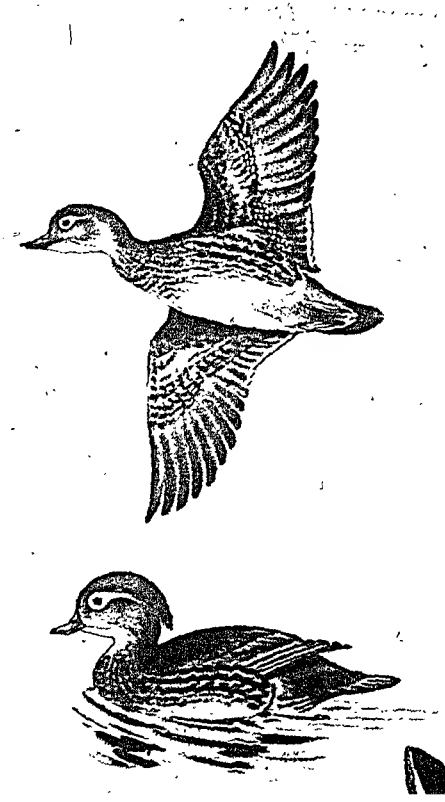
FEMALE

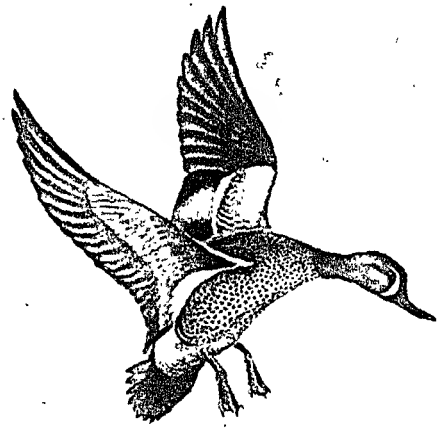
ON THE WATER:

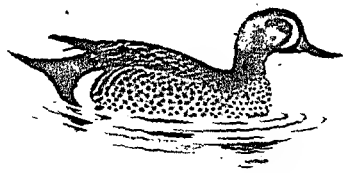
Male—Medium size. Rides high. *Crested head.* Crest points backward and down—never raised. *Head dark with white lines from throat pointed upwards.* Back dark but glinting with iridescent colors. Dark breast. Fairly long tail. White crescent in front of wing. Male wood ducks are a riot of lustrous colors—reputed to be one of the most beautiful ducks in the world. Very rare in Western Canada—more common in British Columbia.

Female—Crested head as in male but dark brown. Body all dark brown. Triangular white spot encircles eye.

One of the most gorgeous of all waterfowl. Male cannot be mistaken for anything else. Look for the white spot around eye of dark brown female. The fairly long wedge shaped tail of both sexes is a good field mark in flight.

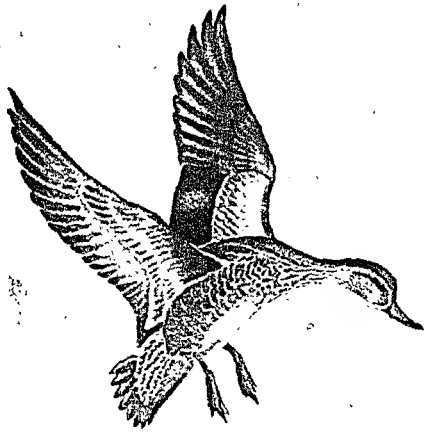


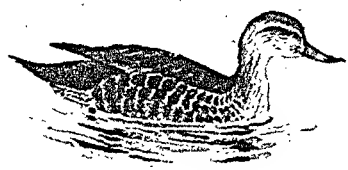




MALE

FEMALE





Blue-winged Teal

(Anas discors)

OTHER NAMES: Blue-wing.

Field Marks

IN FLIGHT:

Male and Female—Small size. Both sexes with large chalky blue patches on fore part of wings—not so brilliant in the female. These patches appear white under some light conditions. Small size will separate from Shoveller and Baldpate with similarly placed wing patches.

ON THE WATER:

Male—Small size. General appearance dark grey. *White crescent in front of eye.* Tail end dark with white patch before it.

Female—Small size. Greyish brown duck without any distinctive markings but if watched will sooner or later expose part or all of the blue patch on her wings. Tail end lighter grey than rest of body. Otherwise difficult to tell from female green-winged teal and indistinguishable from female Cinnamon Teal.

No difficulty is experienced in identifying the male Blue-wing either in flight or on the water. The female in flight is identified by the blue wing patch except from the female Cinnamon Teal which also has the blue patch but as the Blue-winged teal is very common and the Cinnamon teal very rare in Canada the chances of confusion are remote.

Green-winged Teal

(Anas carolinensis)

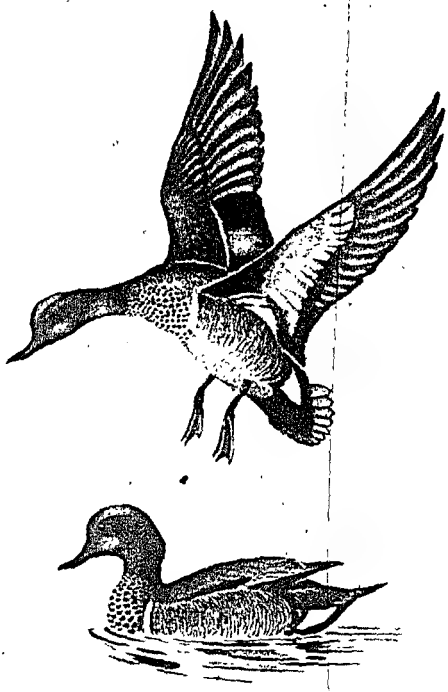
OTHER NAMES: Green-wing.

Field Marks

IN FLIGHT:

Male—Small size. Rapid wing beats. No contrasting markings on dark head and back but *flash of metallic green on wing* often seen under favorable light conditions. White below with silvery grey wing linings.

Female—Dark brownish duck of small size. Metallic green speculum as in male. Lack of any prominent marking, coupled with small size, is distinctive.



MALE

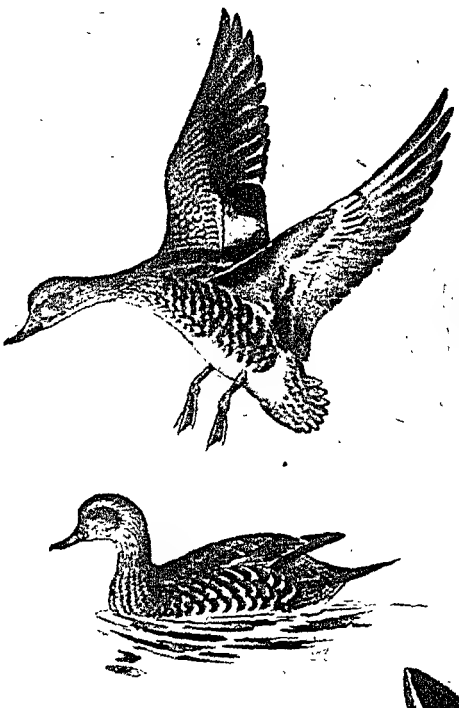
FEMALE

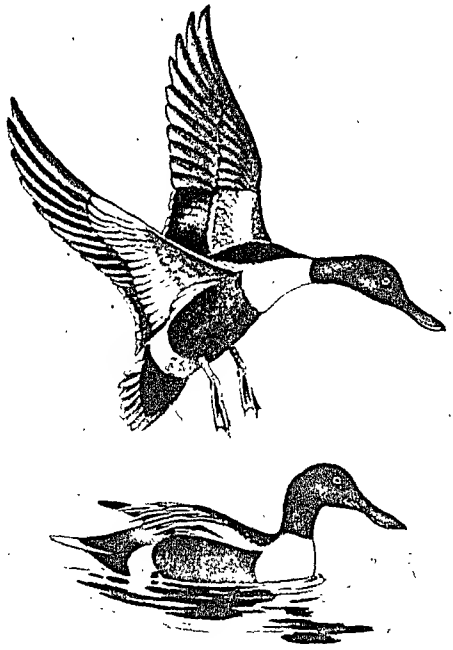
ON THE WATER:

Male—Small size. *White, crescent-shaped mark on body in front of wing and yellowish spot on side in front of tail* are good field marks. Small, dark head. (The rich chestnut, green and black colors of the head are not visible at ordinary observing distances).

Female—Small size and *complete lack of any distinctive markings* are, in themselves, probably the best distinctions.

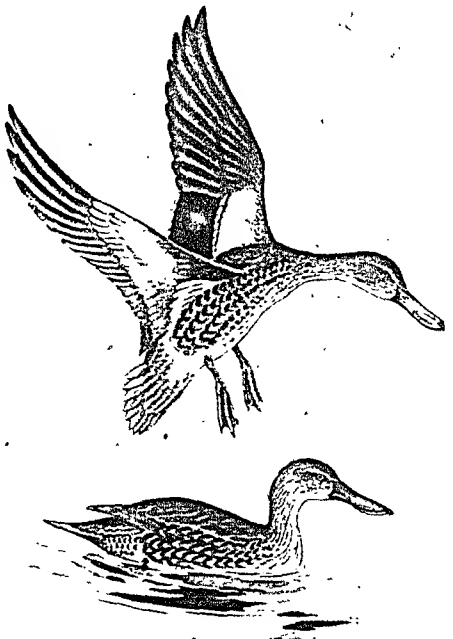
The small size of the male and female in flight with no conspicuous markings is the best field mark. On the water the narrow white crescent on the side in front of folded wing, and lemon-colored spot on the side in front of tail, is a combination possessed by no other duck.





MALE

FEMALE



Shoveller

(Spatula clypeata)

OTHER NAMES: Spoonbill; Spoony.

Field Marks

IN FLIGHT:

Male—Medium size. Large, spoon-shaped bill. Dark head, white breast, broad chestnut band across middle. Under tail dark. Chalky (pale) blue wing patches on fore parts of wings and white streaks running lengthwise on each side of upper body. Tail feathers white—whiter than in Mallard. A bird of contrasting color pattern and profile which cannot be confused with any other species.

Female—Medium size. A buffy-brown duck with reduced and subdued bluish wing patches on forepart of wing. Most noticeable feature is the outsized bill which gives it an unmistakable outline. Tail feathers dusky-white.

ON THE WATER:

Male—Medium size. Large head with heavy-looking spoon bill. Glossy head and neck which shines with lustrous green, blue or indigo—depending on the angle of incidence from which the light strikes. White breast, Chestnut sides, white patch between sides and tail. Rides low in front and high behind.

Female—Medium size. Buffy brown general appearance with ungainly bill, which is yellowish, the best field mark.

The bill, disproportionate in size with the rest of the body is absolutely distinctive in both sexes. The colorful male shows more white than any other surface feeding duck, both in flight and on the water. The female could possibly be confused with the female Mallard by a careless observer but the unique bill settles the matter beyond doubt.

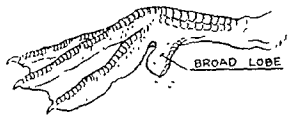
Diving Ducks

Hind toe with broad lobe.

Bill—broad, not "toothed."

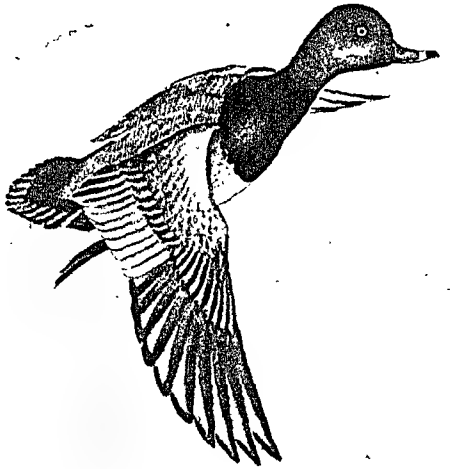
The Mergansers or Sawbills are not illustrated in this booklet. They have narrow, cylindrical bills with serrated (toothed) edges.

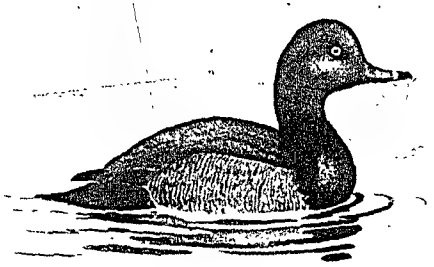
The Ruddy duck is an exception to the general rule of moulting in mid-summer into an "eclipse plumage". This species retains its spring plumage throughout the summer and changes in late August and September into a dark brownish plumage which it carries until the following April or May.



FOOT OF DIVING DUCK

FOOT OF SURFACE-FEEDING DUCK





MALE

FEMALE

Redhead

(Aythya americana)

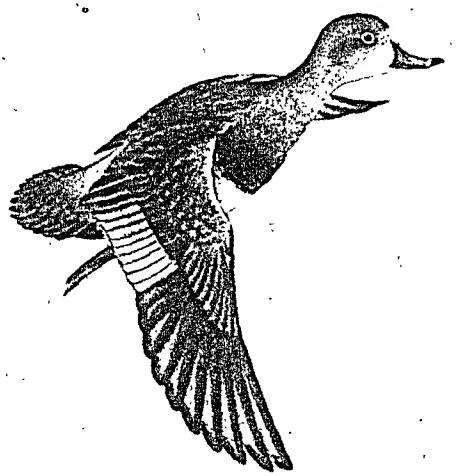
OTHER NAMES:

Field Marks

IN FLIGHT:

Male—Tufty red head and short neck. Chunky outline. Black neck and breast — greyish-white belly. Grey back and wings with narrow white trailing edge to grey wing patch.

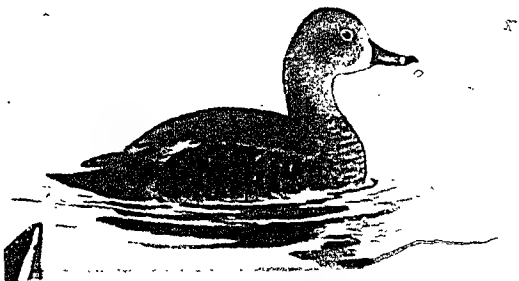
Female—Tufty head and chunky appearance. Grey wing stripe, otherwise no conspicuous markings. White trailing edge to grey wing patch can be seen at close range.



ON THE WATER:

Male—Large duck. *Red head with high brow contour. Dark grey back.* Black neck and breast. Dives for food. Rides fairly low. Dark blue bill. Tail end black.

Female—Brownish bird with grey wings. Blue bill, narrow white edge to grey wing patch. *Greyish patch at base of bill and whitish cheeks.* Hoarse quack.



The Redhead can only be confused with the Canvasback from which it is readily separated by the shape of the head. The heavy, wedge-shaped head of the Canvasback is distinctive.

Ring-necked Duck

(Aythya collaris)

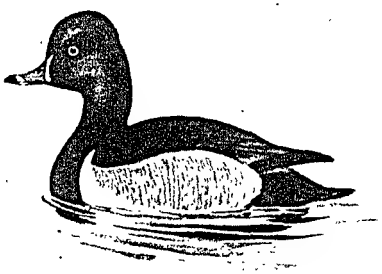
OTHER NAMES: Ring-bill; Blackjack; Raft Duck; Blackhead.

Field Marks

IN FLIGHT:

Male—Small size. General dark color and narrow white trailing edge to grey wing patch. Black breast and grey white belly.

Female—Small dark duck with *grey wing patch narrowly edged with white.*



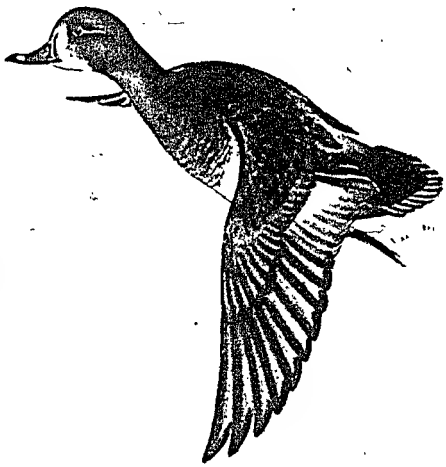
MALE

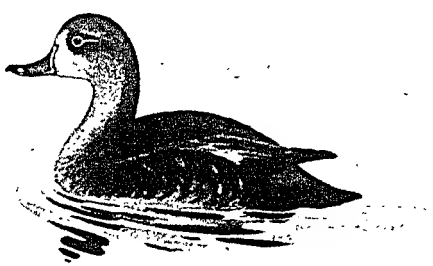
ON THE WATER:

Male—Small dark duck with *prominent white crescent in front of wing* between black breast and greyish sides. *Pale bluish bill is banded with white near tip.* Tail end black. Grey wing patch is edged with white.

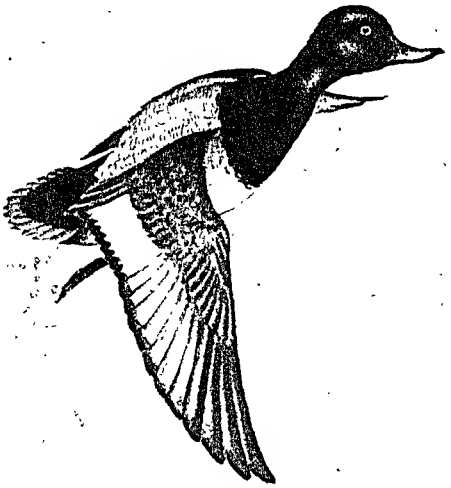
Female—Small size. *Dark color with pale cheeks. Bluish bill is banded white near tip.*

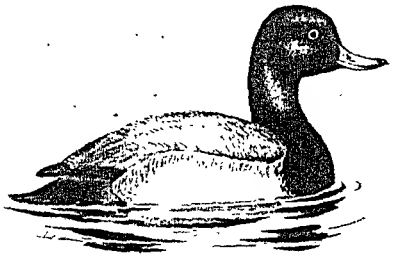
FEMALE





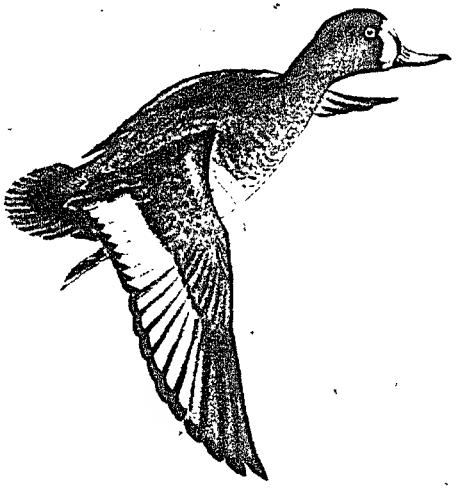
The dark brown ring around the neck of this species, from which it gets its name, cannot be seen in the field. The Ring-neck is frequently overlooked and mistaken for Lesser Scaup. It is not as white on the sides and back (on the water) as the scaup and shows a black back. In flight, it shows no white on the wings as does the scaup. The white crescent on the side in front of wing (on the water) is more prominent than a similar marking on the male Green-winged teal. The white ring near the tip of the bill can be seen distinctively at surprisingly long distances, especially with binoculars.

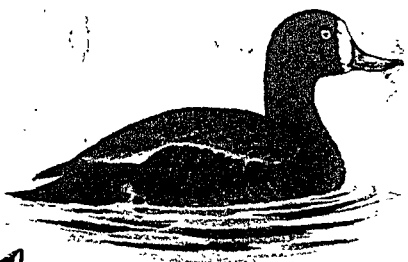




MALE

FEMALE





Greater Scaup Duck

(Aythya marila)

OTHER NAMES: Big Bluebill; Big Broadbill; Big Fall Duck.

Field Marks

IN FLIGHT:

Male—Under favorable conditions can be told apart from the Lesser Scaup by the *length of white on the hind part of wing which* extends into the six or seven primary flight feathers adjoining the speculum on the secondaries. *The effect is a broad band of white about twice as long as that of the Lesser Scaup.* Difference in size is not appreciable. Greenish sheen on head (purplish on Lesser scaup) can be seen under exceptionally favorable light conditions. Otherwise there is no difference from the Lesser scaup.

Female—Brownish duck with white belly, blue bill and white face mask at base of bill. *The extended white wing band is prominent and is the only reliable field mark in flight.*

ON THE WATER:

Male—Cannot be distinguished from the male Lesser Scaup, except under exceptionally favorable light conditions when the greenish sheen on head may be seen. Difference in size not appreciable.

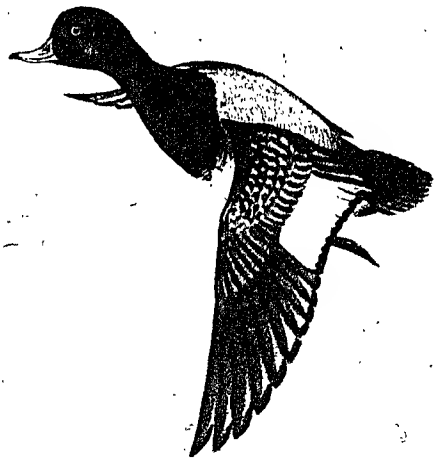
Female—Cannot be distinguished from Lesser Scaup except in flight.

The broad band of white on the hind part of wing of both sexes is the only reasonably reliable field mark which separates this species from its smaller relative—the Lesser Scaup.

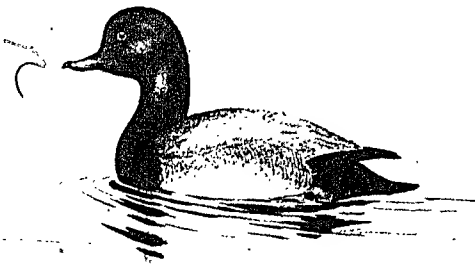
Lesser Scaup Duck

(Aythya Affinis)

OTHER NAMES: Bluebill; Little Bluebill; Broadbill; Fall Duck; Raft Duck.



Field Marks



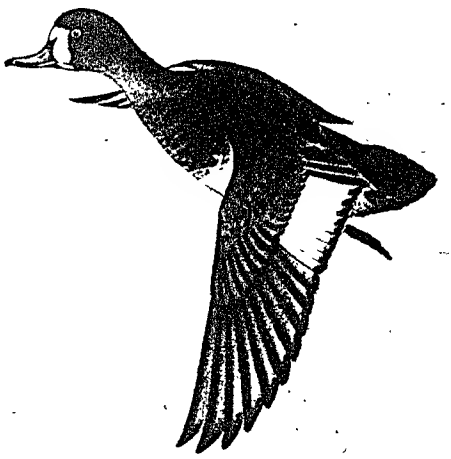
MALE

FEMALE

IN FLIGHT:

Male—Medium sized, dark, grey-backed duck with white belly, and *broad white wing patch.* Black head, neck and upper breast, black tail. Contrasting with the amount of white the male shows when on the water is the small amount shown when in flight.

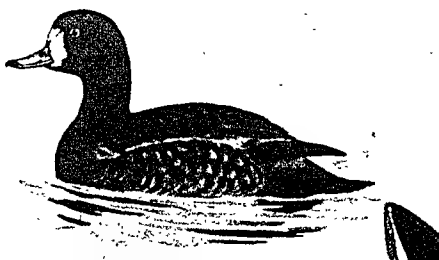
Female—Medium sized, dark grey-brown duck with white wing patch and white face mask at base of bill.



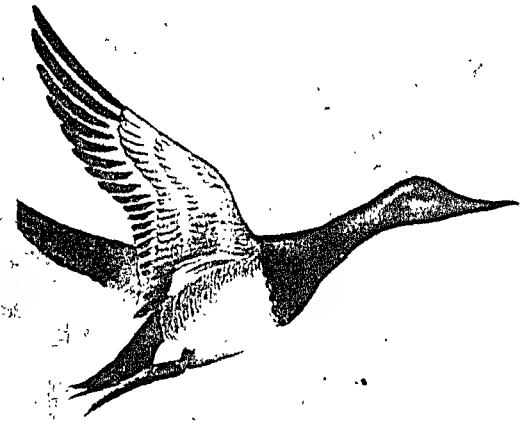
ON THE WATER:

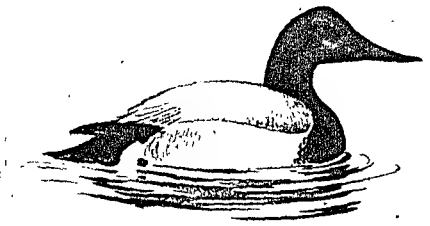
Male—Medium size. Black head, neck and breast. Black tail. White sides and back—grey on back. Blue bill. Purplish sheen on head can be seen at close range under favorable light conditions.

Female—Medium size. A dark, greyish brown duck with *white face mask at base of bill.* Blue bill. Note: Immature males have the white face mask in fall.



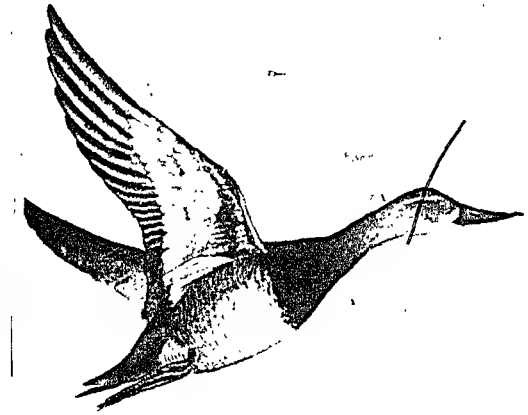
See remarks on Greater Scaup. Lesser Scaups are common breeders on the Canadian prairies but the Greater Scaup breeds farther north. On migration the Greater Scaup is rare in the interior—common on the coast.

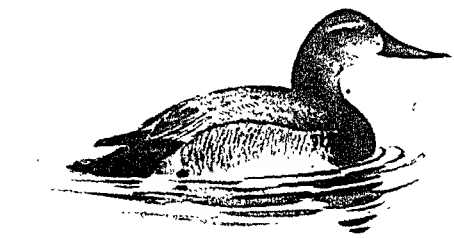




MALE

FEMALE





Canvasback

(Aythya valisineria)

OTHER NAMES: Can.

Field Marks

IN FLIGHT:

Male—Large size and long, wedge shaped head. Whitish back and wings—greyer towards the tips. Black neck and breast and white belly.

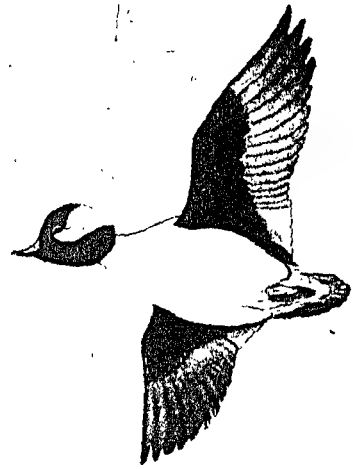
Female—Darker than female redhead. *Long, wedge-shaped head as in male.* Dark brown to slaty on back and wings—whitish below.

ON THE WATER:

Male—Large size. *Long, wedge-shaped head—low brow outline.* Reddish brown head. Black neck and breast. *Whitish (canvas-colored) back.* Black tail.

Female—Large size. *Long, wedge-shaped head like male's.* Pale brown head with paler cheeks.

The male Canvasback on the water should not be confused with any other species. The Scaup is the only other duck with a similar pattern at a distance but the shape of head and size quickly identifies the Canvasback. The female is most likely to be confused with the female Redhead but the large, wedge-shaped head determines identity beyond doubt.



Bufflehead

(Glaucionetta albeola)

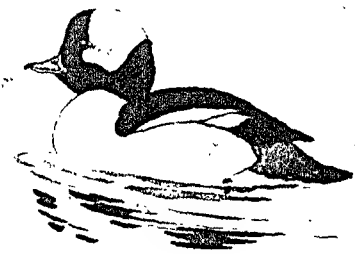
OTHER NAMES: Butterball.

Field Marks

IN FLIGHT:

Male—Very small size. Very fast wing beats. Large (puffy) head. A small black and white duck. Black wings with large, white patches. *White patch on head. Shows more white than any other small duck.*

Female—Very small size and rapid wing beats. Darker than male. Smaller white patches on hind portion of wing. *White spot on cheeks.*



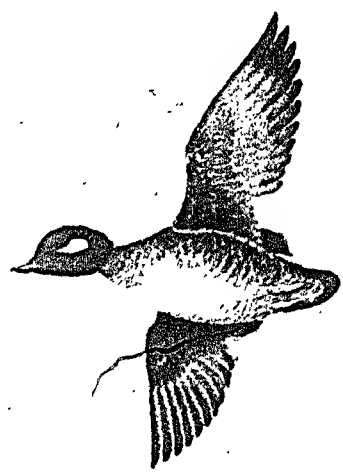
MALE

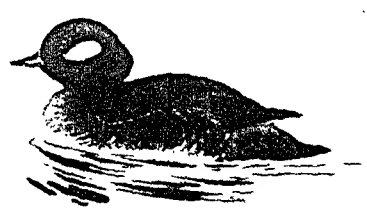
FEMALE

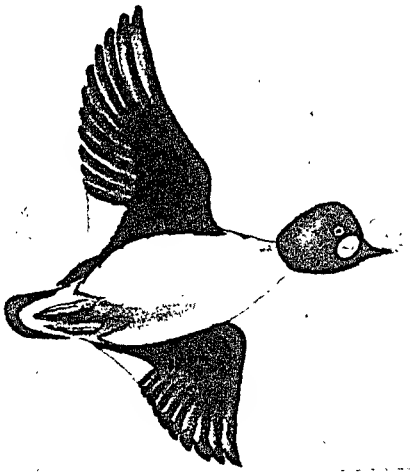
ON THE WATER:

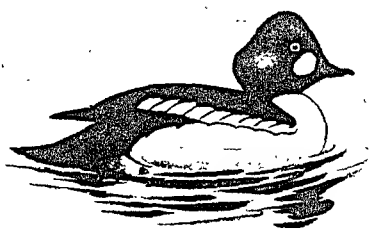
Male—Very small size. Prominent white patch on large, round black head. Black back, grey tail, otherwise all white. Size and predominance of white in plumage are distinctive.

Female—Very small size. A dark little duck with small whitish cheek patches and whitish breast.



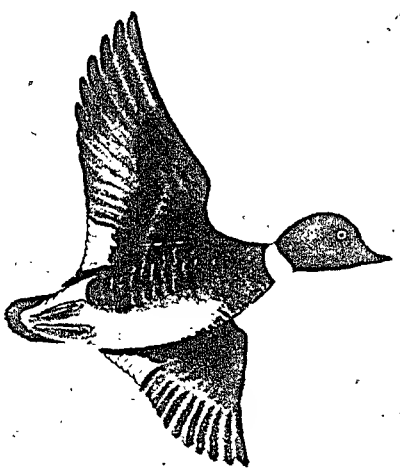


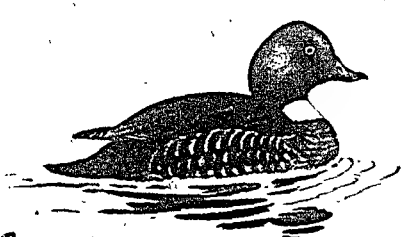




MALE

FEMALE





American Golden-eye

(Glaucionetta clangula americana)

OTHER NAMES: Whistler; Goldeneye.

Field Marks

IN FLIGHT:

Male—Large "black" head, short neck, white underparts. Shows more white in flight than on water. *Half wing white divided by narrow black line. Wings have shrill whistle* hence name "Whistler."

Female—Same outline. *Much darker on back.* White ring around neck. Dark breast, white belly. White wing patches are large but smaller than male's.

ON THE WATER:

Male—Medium size. Large tufty head. short neck. White breast and sides. *White spot in front of eye.* Yellow (golden) eye. General appearance more white than black. *Greenish sheen on head.*

Female—Same outline. *Mostly dark with white collar around neck. No spot on face. Yellow eye.* General appearance dusky.

This species is the common golden-eye of the interior.

Barrow's Golden-eye

(Glaucionetta islandica)

OTHER NAMES: Whistler.

Field Marks

IN FLIGHT:

Male—Similar in outline and general appearance to the American Golden-eye. Large tufty head. White underparts. Wing half white between body and primaries—rather more black than shown by the other golden-eye. Shrill whistle of wings is heard for a great distance.

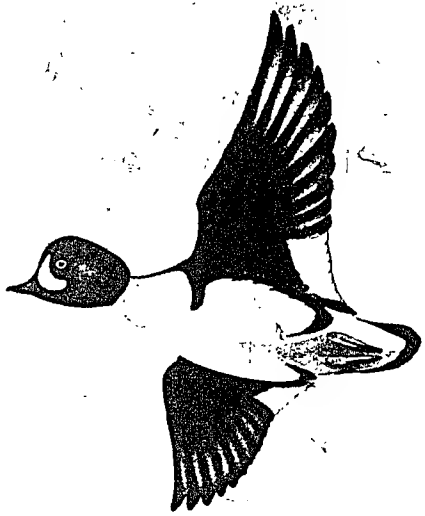
Female—Similar outline as male. Generally dusky but showing white on lower breast and belly. *Reduced white wing patches but still prominent. White collar around neck.*

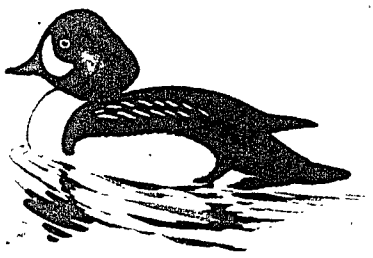
ON THE WATER:

Male—Medium size. Large tufty head with *crescent-shaped white spot in front of eye* (instead of round white spot of the American golden-eye). *Purplish sheen on head.* General appearance more white than black. Yellow (golden) eye.

Female—Medium size. Same outline as male. A dusky duck with white collar around neck. Yellow, (golden) eye.

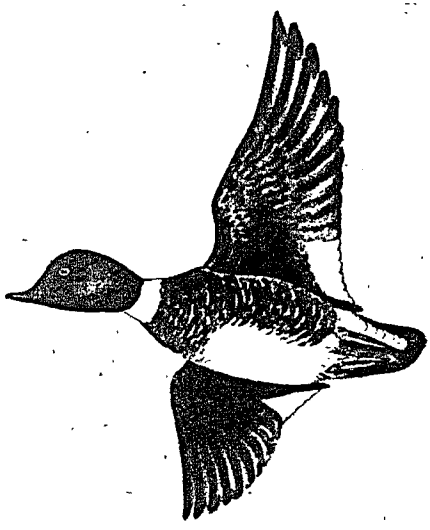
Barrow's Golden-eye is very rarely seen on the prairies. It is a bird of the Atlantic and Pacific coasts, breeding in the interior of Labrador, British Columbia and the mountains of western Alberta.

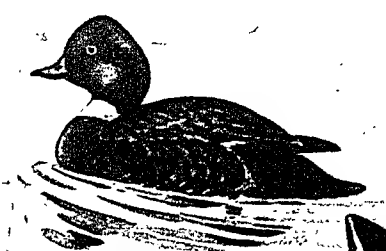


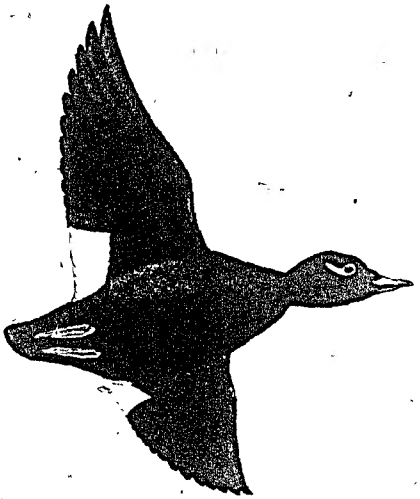


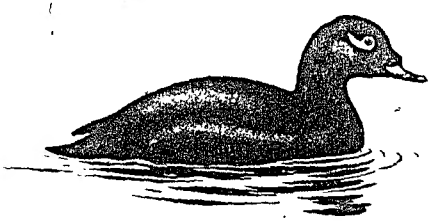
MALE

FEMALE









MALE

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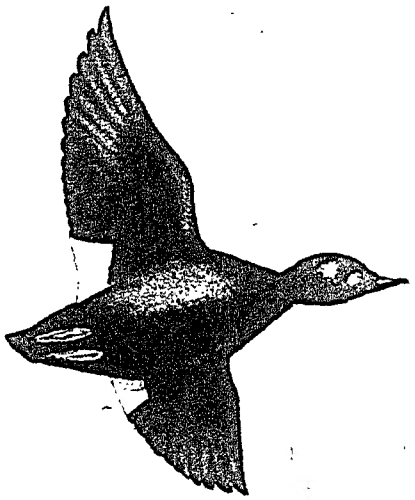
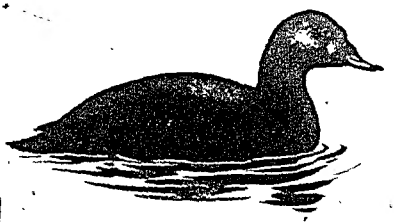




White-Winged Scoter

(Melanitta fusca deglandi)

OTHER NAMES: Sea Coot; Whitewing; Scooter.

Field Marks

IN FLIGHT:

Male—Large, heavy looking rounded body all black. Large white patches on hind part of wing. Often fly close to water one behind the other.

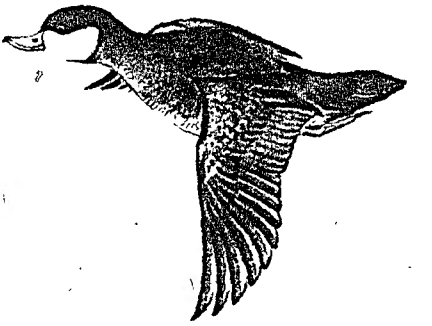
Female—Similar to male but browner, *white patches less contrasting.*

ON THE WATER:

Male—Large, all black duck with heavy looking bill. White of wing shows as rectangular patch towards rear of body. White spot *under eye.*

Female—Similar outline. All dark brown with *white spot in front of and behind the eye.* White patch towards rear of body less conspicuous than on male.

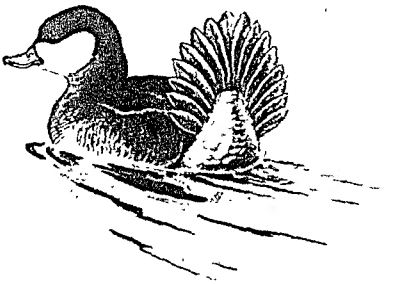
The scoters are the "big bombers" of the duck tribe. They have a heavy, rounded appearance in flight which is characteristic.



Ruddy Duck

(Erismatura jamaicensis rubida)

OTHER NAMES: Ruddy; Spiketail.



MALE

FEMALE

Field Marks

IN FLIGHT:

Male—Small size. *Small head with White cheeks. Thick neck,—all reddish body.* Bright blue bill.

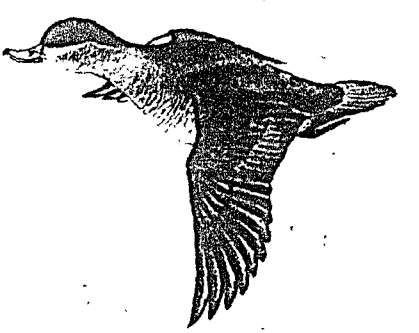
Female—Same. *All grey-brown. White cheeks and throat.*

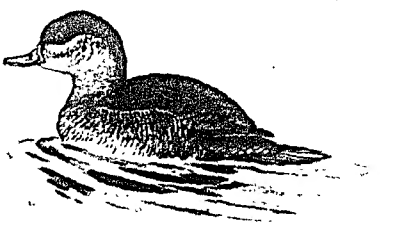
ON THE WATER:

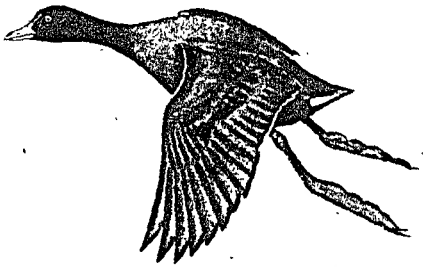
Male—Small duck. *All rusty red except black cap on head. White cheeks and chin. Thick neck.* Bright blue bill. Often swims with tail feathers cocked up over back. In fall and winter male is *all grey with black crown and white cheeks.*

Female—Similar outline. *All greyish brown with light cheeks crossed by a dark line.* A small dark, chunky duck with no distinctive markings except white cheeks.

The male Ruddy cannot be mistaken for any other duck. Its reddish body and highly contrasting white cheeks and chin can be seen at great distances. The white cheeks and outline of the female leave no room for doubt.







Whitebill

(Fulica americana)

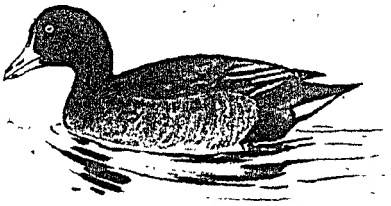
OTHER NAMES: Coot; Mudhen.

Field Marks

IN FLIGHT:

Male—Medium sized, *fowl-like dark grey, bird with rather long, clumsy looking legs and feet which stick out beyond the tail.* The feet are lobed, not webbed and dark greenish. A narrow white edging to the hind wings can be seen at close range. *The white bill is conspicuous.*

Female—Similar in all respects to the male.



MALE

ON THE WATER:

Sexes alike. A medium sized duck-like bird which rides fairly high. *All over dark grey (blackish) with conspicuous white bill, and frontal shield or forehead.* White undertail patches are prominently displayed during courtship performance. Small head and slender neck which give a distinctive silhouette. Bobs the head like a pigeon when it swims or walks. Spatters over the water for several yards before taking to wing.